

US EPA RECORDS CENTER REGION 5



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PHASE II RCRA FACILITY INVESTIGATION REPORT

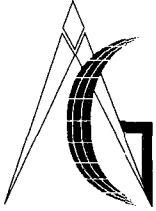
Prepared for:

**REFINED METALS CORPORATION
Beech Grove, Indiana**

Prepared by:

**ADVANCED GEOSERVICES CORP.
Chadds Ford, Pennsylvania**

**Project No. 98-478-03
May 3, 2002
Revision 1.0 (November 18, 2002)**



ADVANCED GEOSERVICES CORP.

"Engineering for the Environment"™

Chadds Ford Business Campus
Rts. 202 & 1, Brandywine One - Suite 202
Chadds Ford, PA 19317-9676
Voice: (610) 558-3300 Fax: (610) 558-2620

Toll-Free: (888) 824-3992
Email: agc@agcinfo.com
Web Site: <http://www.agcinfo.com>

May 3, 2002

98-478-05

Mr. Jonathan Adenuga
United States Environmental Protection Agency - Region V
RCRA Enforcement Branch
77 W. Jackson Street, Hre-8J
Chicago, IL 60604-3590

RE: Phase II RFI
Beech Grove, Indiana

Dear Mr. Adenuga:

On behalf of Exide Technologies, Advanced GeoServices Corp. is submitting three copies of the Phase II RFI Report for the Refined Metals Corporation facility located at 3700 South Arlington Avenue, Beech Grove, Indiana.

Sincerely,

ADVANCED GEOSERVICES CORP.

Paul G. Stratman, P.E.
Project Manager

PGS:np

Enclosures

cc: Rebecca Joniskan, IDEM
Matt Love, Exide Technologies
US Department of Justice

May 3, 2002

United States Environmental
Protection Agency – Region V
RCRA Enforcement Branch
77 W. Jackson Street, Hre-8J
Chicago, IL 60604-3590
Attn: Mr. Jonathan Adenuga

Re: Phase II RCRA Facility Investigation Report
Refined Metals Corporation
Beech Grove, Indiana

Dear Mr. Adenuga:

Pursuant to your request, enclosed is the Phase II RCRA Facility Investigation Report for the subject facility. I certify under penalty of perjury that the information contained in or accompanying this Phase II RCRA Facility Investigation Report is, to the best of my knowledge after thorough investigation, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

EXIDE TECHNOLOGIES



Matthew A. Love
Director, Environmental Affairs

Enclosure

cc: Rebecca Joniskan – IDEM (w. encl.)



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1.0 INTRODUCTION

1.1 GENERAL

The Refined Metals Corporation (RMC) facility was the location of secondary lead smelting operations from 1968 through 1995. RMC was involved in the reclamation of lead from used automotive and industrial batteries and other lead bearing materials. The Site ceased smelting operations on December 31, 1995.

During its operational life, the facility handled materials that were classified as hazardous materials or hazardous wastes under the Resource Conservation and Recovery Act (RCRA). At this time, the Site is idle except for the wastewater treatment system which remains in operation. The wastewater treatment system remains in place to collect and treat stormwater runoff from the lined lagoon and other site areas.

1.2 PURPOSE

On July 14, 1998, RMC entered into a Consent Decree with the United States Environmental Protection Agency (USEPA) and the Indiana Department of Environmental Management (IDEM). Under this Consent Decree, a RCRA Facility Investigation (RFI) is to be performed to evaluate and determine the full nature and extent of releases and to collect information necessary to support human health and ecological risk assessments so that a Corrective Measures Study may be implemented. Pursuant to Section VI, Paragraph 42 of the Consent Decree (Compliance Requirements for Corrective Action), Advanced GeoServices Corp. (AGC) has performed the RFI in accordance with the approved RFI work plans on behalf of RMC. The preparation and implementation of the RFI work plans were enacted in accordance with Exhibit B of the Consent Decree and the EPA's RCRA Facility Investigation Guidance Document (EPA 530/SW-89-031). The RFI was conducted in multiple phases. The results from the initial phase of sampling were presented in the Phase I RFI Report dated August 31, 2000. Based on the results of the Phase I RFI



and as required by the EPA after the Phase I RFI Report was submitted, a Phase II RFI Work Plan was submitted to the EPA on December 20, 2000. In response to comments on the Phase II RFI Work Plan issued by the EPA on April 3, 2001, revisions to the Phase II RFI Work Plan were submitted to the EPA on June 27, 2001. The EPA approved the Phase II RFI Work Plan on July 13, 2001. Additional site sampling was conducted during a closure investigation to address three former RCRA-regulated solid waste managements units (SWMUs). The results of the SWMU closure investigation were presented by AGC in the Closure Investigation Report dated June 1, 2001.

This Phase II RFI Report presents a summary of pertinent Phase I RFI activities and details the results of the Phase II investigation conducted from July 2001 through April 2002. The information contained in this report cites the findings of the RFI regarding the presence, magnitude, extent and mobility of hazardous waste and hazardous constituents on and beneath the former site area and adjacent off-site areas that may have originated from the RCRA permitted hazardous waste or solid waste management units at the Site.

In conjunction with the Phase II RFI, additional sampling was conducted as a part of the SWMU Closure Investigation. The results of this sampling are presented under separate cover.

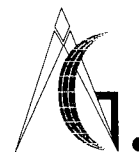
1.3 ORGANIZATION

This document contains a description of the field activities associated with the implementation of the Phase II RFI work plan and the results of the laboratory analysis of the samples collected during the Phase II RFI. This document is organized as follows:

- Section 1.0 - General introduction provided above;
- Section 2.0 - Facility Background, including ownership and operational history as well as a discussion of the nature of contamination;



- Section 3.0 - Site Setting, provides a physical description of the Site including geologic and hydrogeologic characteristics;
- Section 4.0 - Methods and Procedures, details the scope of work conducted as part of the Phase II RFI;
- Section 5.0 - Results, presents the analytical results of the samples collected during the Phase II RFI field activities;
- Section 6.0 - Site Characterization Summary, summarizes the characteristics of site groundwater, soil and sediment with respect to the constituents addressed by the RFI;
- Section 7.0 - Presents the Conclusions that may be drawn from the findings of the RFI; and
- Section 8.0 - Recommendations.
- Section 9.0 - Interim Measures.



2.0 FACILITY BACKGROUND

A detailed description of facility background was provided in the Phase I RFI Report. A brief summary is provided herein for those readers not familiar with that report.

2.1 FACILITY LOCATION

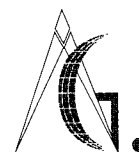
The RMC facility is located at 3700 South Arlington Avenue in Marion County, Beech Grove, Indiana, approximately four miles south-southeast of downtown Indianapolis (Figure 2-1). The Site occupies approximately 24 acres, of which approximately 10 acres represented the active manufacturing area (including paved areas and buildings). The remaining 14 acres includes grassed and wooded site areas. The configuration of the Site is triangular, bounded by Arlington Avenue (oriented in a north to south direction representing the hypotenuse), Big Four Road (along the base), and the common property line with a natural gas company forming the third side. The northwest end of the triangle is truncated by a railroad right-of-way (Figure 2-2).

The Site is relatively flat with less than 10 feet of total relief. Natural site drainage is toward the north and east. The former manufacturing area is characterized by nearly 80,000 square feet (sf) of structures. The site plan is illustrated in Figure 2-2.

The ground surface surrounding the buildings is currently paved (primarily with concrete). Older facility photographs indicate that areas northwest and northeast of the main facility structure were unpaved except for a concrete driveway, which encircled the facility. Stormwater runoff is conveyed to the wastewater treatment plant for processing.

2.2 OWNERSHIP HISTORY

The Site was reportedly undeveloped woodlands until 1968. In 1968, the property was developed as a secondary lead smelter by National Lead. National Lead operated the facility from 1968 through



1980, when it was sold to Exide Corporation. In 1985, the Site was purchased from Exide Corporation by RMC. RMC continued to operate the facility until the cessation of operations on December 31, 1995. From April 14, 1995 through December 31, 1995, operations were reduced to enriching and casting lead ingots from off-specification lead products. Since 1996, no production has taken place at the facility except for operation of the wastewater treatment facility, which is still used to treat stormwater runoff from the former manufacturing areas.

2.3 OPERATIONAL HISTORY

2.3.1 Smelting

The facility was constructed as a secondary lead smelter to recycle lead-acid batteries and other lead-bearing wastes. Prior to 1984, battery crushing was performed off-site at other commercial facilities. In 1984, the battery breaker was constructed on-site. One blast furnace and one dust furnace were used at the facility. During operation, the blast furnace used coke and oxygen-enriched air for heating.

Prior to 1984, storage piles were located outdoors with minimal spill and runoff control. The majority of stormwater runoff from the piles and other work areas flowed and/or was pumped to the stormwater lagoon where it was allowed to evaporate. However, when the lagoon was full, it overflowed to a drainage ditch that flowed off-site toward the east. A small portion of the drainage from the active manufacturing area flowed uncontrolled toward the wooded area to the north, and then along an intermittent stream to the north. During 1984, the material storage building was constructed and the waste piles were moved inside. Reportedly, material was occasionally stored outside after 1984 when the material storage building was full.



2.3.2 Refining

Molten lead from the blast furnace was tapped from the bottom of the furnace to kettles in the adjacent refining and casting area. In the kettles, the molten lead was tested to determine its quality. Antimony and tin were either added or removed to create the required lead type and quality. A list of principle materials used on-site is provided on Table 2-1.

2.3.3 Wastewater Treatment

With the installation of the battery crusher in 1984, waste sulfuric acid, and acidic and lead-bearing wastewater was actively collected for treatment through a batch neutralization process. During 1988, the Site was also re-graded and stormwater drainage modified to allow the collection and treatment of all stormwater runoff from the active manufacturing areas. Wastewater effluent is discharged to the Municipal Sanitary Sewer system which conveys the wastewater for treatment at the City of Indianapolis POTW.

2.3.4 Storage Tanks

Reportedly, underground storage tanks (USTs) were never used at the Site. Three above ground storage tanks (ASTs) - two 10,000-gallon ASTs and one 20,000-gallon AST - were used to store diesel fuel for company trucks. The tanks were reportedly cleaned out in 1985 and have since been out of service. The three ASTs are located at the northeast end of the former manufacturing area as shown on Figure 2-2.

A leak in a valve of one of the now out-of-service diesel tanks occurred around 1983, resulting in a spill of unknown volume outside of the containment wall. A portion of the spill flowed along the drainage ditch located north of the refining area. The contaminated soil was excavated and the tanks were emptied. Although documentation of the spill and subsequent response action is not available, the soil clean-up was reportedly conducted under state supervision.



2.4 REGULATORY HISTORY

2.4.1 RCRA

As stated above, following the promulgation of RCRA, the facility submitted a Part A RCRA permit application. On November 19, 1980 the facility was granted Interim Status as a hazardous waste treatment, storage and disposal facility. The RCRA Subtitle C units included indoor and outdoor waste piles (used to store batteries and lead-bearing wastes), and the 750,000-gallon concrete lined lagoon. A Part B application was submitted during the mid-1980s, although full RCRA permitted status was never granted. The EPA maintains that interim status was lost on November 8, 1985 as a result of RMC's alleged failure to comply with Section 3005(e)(2) of RCRA, 42 U.S.C. 6925(e)(2); RMC did not agree with this allegation.

RMC submitted a revised Part A application on October 26, 1988 requesting an increase in the storage volume for spent batteries from 200 cubic yards (cy) to 400 cy. The request was granted on September 20, 1989. A subsequent revised Part A application was submitted to IDEM on December 7, 1990 for increasing the storage volume of spent batteries from 400 cy to 500 cy. IDEM denied the increase. RMC filed for a stay and was granted interim status to store 400 cy, however, IDEM approved the revised Part A application on June 3, 1991 with the provision that it did not grant interim status under RCRA. The Part B application was not resubmitted. In 1994, the facility withdrew its Part A and Part B permit applications.

The following enforcement actions were identified for the facility:

- Notice of Violation April 13, 1982;
- Notice of Violation July 30, 1982;
- Complaint Order (N-283) December 13, 1985;
- Notice of Violation (V-442) February 16, 1987; and
- Letter of Warning March 26, 1987.



EPA filed a complaint in Federal Court against the RMC facility on November 21, 1990. The complaint requested the court to order RMC to cease its operations as a hazardous waste treatment, storage, and disposal facility, to submit a closure plan, prepare and implement a plan to investigate the nature and extent of hazardous waste constituents released from the facility and the effects on groundwater, to prepare a plan for remediation of contamination in and around the facility, and to pay a fine for each violation. The complaint indicates that the EPA had issued a "Determination of Release of Hazardous Waste into the Environment from a RCRA Interim Status Facility" on or about May 5, 1989. Negotiations ensued between RMC and the EPA concerning the deficiencies. A draft Consent Decree was also being negotiated between RMC and the USEPA which was ultimately lodged on July 14, 1998 (Civil Action #IP902077C). This Phase II RFI Report is being submitted under the requirements of that Consent Decree.

2.4.2 CERCLA

A site inspection was performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1980. In 1985, a preliminary assessment was performed under CERCLA. No further action was planned under CERCLA at that time.

2.5 NATURE AND EXTENT OF CONTAMINATION

2.5.1 Behavior Of Lead

A number of the materials formerly used at the facility have toxic characteristics; however, the principal material of concern is lead. Lead is a common metal and can be found at an average concentration in excess of 30 ppm in natural soils and 1-10 µg/l in surface water. Most lead salts are fairly insoluble in water; however, the solubility depends on the pH, with solubility increasing in more acidic conditions. Movement of lead in soils depends on its adsorption, chelation with organic matter, and the precipitation of the less soluble salts. In general, lead reacts with soil anions or clays to form insoluble complexes, inhibiting its mobility. Lead can be ingested or absorbed by



inhalation. Poisoning from acute exposure to lead is uncommon. The primary toxic effects from chronic exposure are on the blood and the nervous system.

2.5.2 Discussion Of Source Areas

Facility inspection reports identified poor housekeeping, storage of materials on unpaved surfaces, spillage in a baghouse, and runoff/runon control for the outdoor waste piles as situations which could aid migration from the paved site area.

Based on the documented operating history and an understanding of the character of lead mobility and transport, the most significant potential sources of contamination at the facility during its operating history were erosion and transport of lead-bearing solids from outdoor waste piles and other areas by stormwater runoff (prior to re-engineering of site drainage to contain all runoff from the manufacturing area), fugitive dust emissions from traffic and production areas, unpaved outdoor waste pile areas (north and west of the material storage building), and stack emissions. Based on original facility grading, transport and deposition of lead-bearing sediment from the facility could have occurred in areas northeast and east of the Battery Breaker building prior to containment of site stormwater runoff. The lined stormwater lagoon and the channels that received lagoon overflow represent potential source areas. In addition, those areas that were either unpaved or not covered by a building within the active manufacturing areas could represent an area where lead contaminated sediment or materials could have accumulated and were subsequently covered with pavement or a structure. The fugitive dust and stack emissions could have resulted in the deposition of lead on the ground surface within and beyond the manufacturing area.

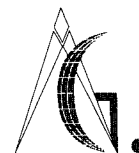
During the preparation of the Phase I RFI Work Plan, AGC performed a review of RMC files to identify previous sampling activities. The file review indicated that previous sampling of environmental media at the facility was limited to an investigation of soils and building interiors performed by Entact, Inc. during April 1996 and quarterly groundwater sampling performed by RMC since June 1991. The groundwater samples were not collected using the low flow sampling



techniques, and potential discrepancies exist between the total and dissolved analytical results (some dissolved concentrations are higher than the total concentrations). Therefore, the data provided by these samples proved to be insufficient in performing an evaluation of the RMC facility. Information and results for the soil samples collected by USEPA, as referenced in the Consent Decree, could not be located.

Floor dust sample results for the warehouse and refining building, collected by Entact, indicated the highest concentration of lead was 129,707 parts per million (ppm). Lead in floor dust samples ranged from 51,702 to 129,707 ppm. Soil samples collected at varying depths beneath the floor slab in the warehouse, refining, and furnace room building had results ranging from non-detect to 2,950 ppm. Floor dust sample results collected from the furnace room, the battery breaker building, and the material storage building indicated lead concentrations ranging from 10,073 to 115,736 ppm. Soil samples collected from varying depths beneath the slab in the material storage building and battery breaker building had lead concentrations ranging from non-detect to 75,373 mg/kg. Surface soil samples collected from outside of the buildings indicated lead concentrations from 43 mg/kg to 70,406 mg/kg. Subsurface samples of varying depths ranged from non-detect to 22,793 mg/kg. The highest lead concentrations were located within the former active manufacturing areas of the Site.

In addition to the Entact samples, soil samples were reportedly collected and analyzed by the EPA. The samples reportedly failed EP Toxicity tests for lead and cadmium. The date of the sampling and the locations where the soil samples were collected from could not be determined.



3.0 SITE SETTING

3.1 PHYSICAL SETTING

The Site is located in the White River Drainage Basin. The Site is situated on a minor local topographic high with a surface elevation of approximately 845 feet above mean sea level (msl). The surface elevation slopes gently to the southeast toward Sloan Ditch, and the northwestern perimeter of the Site slopes to the northwest toward the intermittent headwaters of Beech Creek. Surface water at the Site is collected in the stormwater management basin and is treated and discharged to the municipal sewer system.

Prior to construction of the present-day stormwater collection and control system, surface water from the northern portion of the facility flowed to the intermittent stream that flows northwest to the headwaters of Beech Creek. Surface water from other areas on the Site historically flowed to the same location as the present-day (geomembrane lined) stormwater basin, which was reportedly concrete lined. Water collected in this impoundment either evaporated, or when full, overflowed the banks to a drainage ditch that flowed off-site to the east (Figure 2-2) and then to the south, eventually discharging to Sloan Ditch. Sloan Ditch flows 0.6 mile west-southwest to Churchman Creek, which flows to the west 0.9 mile and discharges to Beech Creek. Beech Creek flows 1.2 miles to the southwest to Lick Creek, which then flows 7 miles to the White River.

3.2 REGIONAL GEOLOGY

The surficial geology of Marion County is glacial till (Tipton Till Plain) consisting of yellowish-gray, bluish-gray, or gray sand or silt with some clay and pebbles and scattered cobbles and boulders. The drift cover in Marion County is believed to be composed of three drift sheets resulting from the Kansan, Illinoian, and Wisconsin glaciations. Till thicknesses range from less than 15 feet to greater than 400 feet. The Site is underlain by approximately 200 feet of unconsolidated material.



Bedrock is encountered at an elevation of approximately 640 feet mean sea level (on the order of 200 feet bgs), and consists of middle Devonian-aged dolomitic limestones. The limestones consist primarily of the Geneva Dolomite and the Jefferson Limestone. The Geneva Dolomite is a light gray to tan and buff to chocolate brown dolomite that contains white crystalline calcite masses. The Jeffersonville Limestone is a pure limestone in the upper portion of the formation, and is laminated with organic material in the lower portion. The organic laminae are more argillaceous than the coralline zone (Harrison, 1963). Meyer, 1975 indicates that shale is present beneath the glacial till and overlying the limestones. Additional detail on the shale unit is not provided by Meyer. The regional dip is to the southwest so that progressively younger formations are encountered below the till plain to the southwest.

3.3 REGIONAL HYDROGEOLOGY

In Marion County, groundwater is encountered in un-named sand and gravel beds overlying the bedrock, the Jefferson Limestone and Geneva Dolomite, and the Niagaran Limestones (Harrison, 1963). The sand and gravel glacial outwash that coincides with the courses of the White River and Fall Creek is the aquifer of greatest economic importance in Marion County. The location of this aquifer generally coincides with the glacial melt water and outwash deposits along the major streams. Fall Creek enters White River upstream of the Site. The White River sand and gravel aquifer is located approximately 5.3 miles west of the Site. The sand and gravel aquifer is unconfined and flows toward and discharges to the surface water bodies. The hydraulic conductivity was determined for sand, sand and gravel, and gravel by Meyer, 1975 and are as follows:



Sand	40 ft/day
Sand and Gravel	240 ft/day
Gravel	415 ft/day

The hydraulic conductivity of the silt and clay was determined to be too low for reporting purposes by Meyer. Specific capacity and lithologic information used in Meyer's hydraulic conductivity calculations of the sand and gravel glacial outwash deposits were obtained from drillers' records.

It is noted by Meyer that three thin, areally discontinuous, sheet-like deposits of sand and gravel in the till-plain area are separated by beds of silt and clay that cause the groundwater in these deposits to be semi-confined. Meyer also notes that large areas of silt and clay often separate one area of an aquifer from another. The elevation of the uppermost semi-confined aquifer beneath the Site was estimated to be approximately 720 ft msl (approximately 120 feet bgs) and is overlain by deposits of varying thickness of silt and clay. Groundwater flow in the uppermost regional semi-confined aquifer is to the northwest. The middle regional semi-confined aquifer is not mapped beneath the Site because an aquitard (clay unit) is mapped in the area. The elevation of the lower regional semi-confined aquifer beneath the Site is approximately 660 ft msl (180 ft bgs) and flow is to the southeast.

The average daily industrial and municipal groundwater pumpage for Marion County is 28.95 million gallons per day (mgpd). Less than 20 percent of the industrial/municipal pumpage is from the bedrock. Also, less than 20 percent of the total pumpage is obtained outside the unconfined glacial-outwash aquifer which occurs only along the White River and Fall Creek and is located at least 5.3 miles west of the Site. The major centers of groundwater pumpage occurred within approximately one mile of a major stream. The estimated total domestic groundwater pumpage is 9.0 to 11.0 mgpd (Meyer 1975).



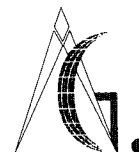
3.4 SITE SPECIFIC GEOLOGY

Based on results of the RFI activities, the surficial geology at the Site is consistent with the regional geology described in Section 3.2. Four deep borings identified as MW-1D, MW-2D, MW-3D and MW-6D were advanced on-site to depths ranging from 110 feet to 130 feet bgs during the Phase I RFI to characterize subsurface conditions. Borings MW-2D and MW-6D were subsequently converted into monitoring wells as discussed in Section 3.5. From these four borings it was determined that a substantial thickness of unconsolidated silt, clay and fine sands exist beneath the Site. The logs for these four deep borings were included in Appendix A of the Phase I RFI Report. The thickness of the till plain beneath the Site is at least 130 feet as bedrock was not encountered in any of the deep borings.

Various portions of the Site have been altered due to plant operation activities. Several topographic high mounds in the wooded area northeast of the manufacturing area and adjacent to the intermittent stream are believed to be fill material from on-site construction activities. Similarly, paved areas and areas below the structures on-site have been filled with gravel of thicknesses ranging from 6 to 12 inches.

3.5 SITE SPECIFIC HYDROGEOLOGY

Shallow groundwater encountered at the Site is believed to represent a local perched zone of saturation in sand layers within the glacial till. AGC reviewed the logs of the four deep borings advanced during the RFI and the five shallow boring logs advanced prior to installation of site monitoring wells MW-1 through MW-5 in 1991 (see Appendix A). The boring logs indicate that this sand layer varies in thickness and elevation throughout the Site. The potentiometric surface for the groundwater on-site is approximately 10 feet bgs, and flow in the shallow on-site wells appears to be to the southeast. Boring logs for the deep borings on-site indicate that a substantial thickness of silt and clay is deposited below the shallow zone of saturation and overlies the regional uppermost semi-confined water bearing zone. The regional uppermost semi-confined aquifer was not



encountered in any of the deep borings. Two of the deep borings were terminated at a depth of 130 feet bgs, as specified in the Phase I RFI Work Plan.

The deep wells completed on-site for the Phase I RFI (MW-2D and MW-6D) were set in a middle perched zone located 75 to 85 feet below grade. It should be noted that these borings were advanced to 110 and 123 feet below grade, respectively, and did not encounter the regional upper-most semi-confined aquifer. Groundwater sampling results for the middle aquifer indicated a total lead concentration below the EPA Action Level of 15 $\mu\text{g/l}$ in the samples collected during the Phase I RFI. Arsenic was encountered in both wells during both rounds of sampling. Similar to the elevated levels of arsenic in soil in the region, it is believed that the concentrations encountered are representative of regional background levels and not impacts from former facility operations. This middle perched zone was not encountered throughout the entire site and is laterally discontinuous.

Due to the substantial layers of silt and clay combined with the areal discontinuity of the regional uppermost semi-confined aquifer it is believed that there is no direct hydraulic connection between the shallow and middle aquifers and the regional uppermost semi-confined aquifer. Sampling results from the two deep wells completed on-site for the Phase I RFI further support this.



4.0 METHODS AND PROCEDURES

4.1 INTRODUCTION

The Phase II RFI field investigation was developed to address specific recommendations of the Phase I RFI and USEPA comments. Field activities were completed in an effort to achieve the following:

- Further evaluate ground water flow and quality;
- Characterize the soil metal concentrations to the north, east and west of the Site; and,
- Characterize the sediment metal concentrations of the on-site drainage ditch.

Following EPA approval of the Phase II RFI Work Plan, the field activities were completed during two mobilizations. In August 2001, four (4) additional on-site ground water monitoring wells were installed, 20 sediment samples were collected from the on-site drainage ditch and 83 off-site soil samples were collected from the adjacent properties to the north and west. In December 2001, additional sediment samples were collected from five locations in the on-site drainage ditch and eight off-site soil samples were collected on adjacent properties to the east and west. Sampling activities and drilling supervision were conducted by AGC and laboratory analysis was performed by TriMatrix Laboratories Inc. (TriMatrix) of Grand Rapids, Michigan. In addition to the Phase II RFI activities, soil samples were collected from nine on-site geoprobe borings to supplement previous closure investigation activities. Results of the supplemental closure investigation activities are being provided under separate cover to IDEM.

4.2 WELL INSTALLATION ACTIVITIES

4.2.1 Introduction

The four monitoring wells installed during the Phase II RFI were completed in the unconfined aquifer, bringing the total number of monitoring wells completed in this unit to nine. One of these



wells, MW-6SR, was installed to replace MW-6S, which was installed in conjunction with the RCRA Closure Investigation but did not yield a sufficient volume of water to produce a representative groundwater sample. Monitoring wells MW-7 and MW-8 were installed along the northern site boundary, downgradient of the Battery Breaker and Material Storage Building, respectively. The fourth well, MW-9, was installed near the southwest corner of the Site as a background well. Monitoring wells locations are illustrated in Figure 4-1. The depth and final disposition of borings completed on-site is presented in Table 4-1.

Monitoring well MW-6 was abandoned on August 21, 2001. Well abandonment was completed by Boart Longyear Environmental Division of Greensburg, Indiana and consisted of tremie-grouting the well casing from the total depth to the surface using a 95% Portland cement/5% Bentonite grout.

4.2.2 Drilling Methods

The boring were advanced and the wells were installed by Boart Longyear. Borings were advanced using hollow stem auger (HSA) techniques and continuous split spoon samples were collected in accordance with ASTM D 1586.

Continuous sampling for lithology was performed along the entire depth of the borehole. The samples recovered from the advancement of the borings were logged by an AGC geologist. Copies of the logs are provided in Appendix A.

Soil samples were collected during well installation to determine vertical permeability of the aquifer. As described in the Work Plan, the analysis was to have been performed on undisturbed samples collected in Shelby tubes. Two Shelby tube samples were collected from MW-6SR at 10-12 feet bgs and 16-18 feet bgs. No Shelby tube samples were collected from the other three wells because of the formation density. Instead, soil samples were collected from MW-7 (at 26-28 feet) and MW-9 (at 22-24 feet and 24-26 feet). The Shelby tubes and soil samples were submitted to GeoSystems



Consultants Inc. for sieve analysis with hydrometers (all samples), and Atterberg limits and permeability analysis (Shelby tubes only).

4.2.3 Well Construction

The monitoring wells were constructed using 4-inch ID, flush-threaded, Schedule 40 PVC riser with a 10-foot length of factory-slotted 0.010-inch PVC well screen. A sand pack was placed to 2 feet above the top of the monitoring well screen with No. 1 sand. A minimum 2-foot thick bentonite seal was placed on top of the sand pack. The remaining annulus of each borehole was tremie-grouted to the surface using a 95% Portland cement/5% Bentonite grout.

All monitoring wells were completed with a 6-inch square steel protective casing with a locking cap. The protective casing extends from an approximate depth of 3 feet bgs to approximately 2 feet above ground. A neat cement seal was placed around the protective casing to a depth of 3 feet bgs. A 2 foot square well pad was installed so that the surface slopes away from the well.

4.2.4 Well Development

The monitoring wells were developed using the surge-block and pump method. Monitoring wells were first surged using a plunger-type surge block assembly. This provides the necessary turbulence in and near the well screen to remove fine-grained material and to properly develop the well. The wells were then purged and developed using a submersible pump. When the development water in each well was relatively sediment free, exhibited a satisfactory clarity and yield, and pH and specific conductance readings had stabilized as measured in the field, development ceased.



4.3 GROUNDWATER SAMPLING

4.3.1 Well Evacuation

Groundwater samples were collected from site monitoring wells MW-1, MW-2S, MW-3, MW-4, MW-5, MW-6SR, MW-7, MW-8 and MW-9 during two discrete sampling events conducted in September and December 2001. Samples were collected using the low-flow sampling technique to more accurately determine the potential for site-related constituents to have entered groundwater. The depth to water in each monitoring well was measured and the purge volume calculated from these measurements and well specifications from construction logs. This provided the sampling team with an estimate of when stabilization of purging parameters would occur. Monitoring wells were purged and sampled from the suspected least contaminated well to the most contaminated well to minimize the potential for cross-contamination.

The wells were purged using a stainless steel low-flow bladder pump placed at the midpoint of the screen in each well. The wells were purged at a flow rate ranging from 100 to 300 milliliters per minute mls/min, depending on the yield of the well. A flow-through cell was used to measure pH, temperature, conductivity, redox potential, and dissolved oxygen prior to contact with ambient air at 3 to 5 minute intervals during purging. Turbidity was also measured at the same time interval. The wells were purged until the field parameters stabilized to within 10% over three readings and pH readings varied by less than 0.1 unit.

Purge water was contained in 55-gallon drums until analytical results of groundwater samples were evaluated. Drums were labeled with the location and date of generation (i.e., purge water, MW-1, 5/25/96) and remained on-site until disposal. Based on results of the RFI monitoring well sampling, the collected purge water was processed by the site stormwater runoff system.



4.3.2 Sample Collection

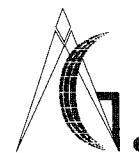
Once the field parameters had stabilized, samples were collected directly from the pump discharge line into laboratory-supplied bottles containing the necessary preservatives at a sampling flow rate of 100 to 300 mls/min.

Sample containers were labeled with a unique identifying number, time and date of sample collection, requested analysis, preservative, and the initials of the sample collector. Samples were packed on ice and shipped to TriMatrix Laboratories Inc. for analysis of eight RCRA metals and antimony (SW-846 6010). Samples collected during the September 2001 event were analyzed for total metals content. Samples collected during the December 2001 event, were analyzed for both total and dissolved metals content. Samples for dissolved metals analyses were field filtered through a dedicated disposable Nalgene 0.45 μ m membrane filter immediately after collection and prior to preservation. The sample was decanted into the dedicated, Nalgene disposable filtration unit and filtered under vacuum pressure created by a hand-held pump. The sample was then immediately transferred to a laboratory supplied bottleware.

4.4 SOIL SAMPLING

The following decontamination procedures were followed prior to the collection of each soil sample:

- Wash equipment thoroughly with a non-phosphate detergent (Alconox) and water using a brush to remove any particulate matter or surface film;
- Rinse equipment with distilled water;
- Rinse with diluted 10 % nitric acid;
- Triple rinse with distilled water;
- Air dry equipment; and
- Wrap equipment in a clean plastic sleeve or in aluminum foil if not used immediately.



Soil samples were collected using decontaminated hand augers where asphalt or concrete was not present. For sample locations where either concrete or asphalt existed, a Geoprobe was used to penetrate the pavement and collect the samples. Soil was removed from the auger bucket, or the Geoprobe disposable acetate sleeve, using a disposable scoop. The sample was then homogenized in a stainless steel bowl and placed into a laboratory-supplied jar. The samples were labeled, placed on ice and submitted to TriMatrix for analysis.

4.4.1 Phase I RFI and Closure Investigation Soil Sampling

4.4.1.1 On-Site Soil Sampling

During the Phase I RFI, soil samples were collected at a total of 58 on-site locations designated as RSB-1 through RSB-58. Samples were also collected from below the floor slab at a total of 14 locations in the interior of the battery breaker, material storage building, the furnace room and warehouse using a Geoprobe drill rig (RSB-71 through RSB-85). The Phase I RFI soil samples were submitted for analysis of eight RCRA metals (SW-846 6010).

Soil sampling associated with the Closure Investigation included 50 on-site locations that were identified with a “CSB” prefix. Four on-site sampling locations were selected to provide background metal concentration data and were identified with a “BSB” prefix. Samples were obtained using a hand auger or Geoprobe. The soil from the first two feet was analyzed for eight RCRA metals, pH, and antimony (SW-846 6010 and 7470). Samples from below 2 feet were archived. Samples of floor dust and lagoon sediments were also collected.

4.4.1.2 Off-Site Soil Sampling

During the Phase I RFI, eight off-site sampling locations were selected on the adjacent properties to the south (the Wavetech property) and northwest (the Citizens Gas Company property). Samples from the Wavetech property were designated as RSB-65 through RSB-68 and samples from the



Citizens Gas property were designated as RSB-63, RSB-64, RSB-69 and RSB-70. These samples were collected using a decontaminated hand auger. Additionally, two locations on the Citizen's Gas Company property were sampled at the 24-30 inch interval. Each of the off-site samples was analyzed for eight RCRA metals (SW-846 6010).

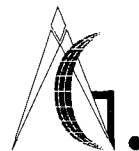
4.4.2 Phase II RFI Soil and Sediment Sampling

4.4.2.1 **On-Site Soil Sampling**

No on-site soil samples were collected a part of the Phase II RFI activities. However, on-site soil samples were collected to supplement previously completed closure investigation activities pursuant to IDEM comments. These results are provided under separate cover to IDEM.

4.4.2.2 **On-Site Sediment Sampling**

In August 2001, sediment samples were collected from 10 locations (R2SED-1 through R2SED-10) along the center line of the drainage ditch adjacent to Arlington Avenue using a decontaminated hand auger. Although the Phase II RFI Work Plan specified collection of 16 samples from the drainage ditch, when sample locations were laid out as specified in the Work Plan (i.e., every 75 feet), only 12 locations were required to cover the specified sampling area. Of these, two locations were not accessible due to construction activities of local Department of Public Works. For reporting purposes samples from the ditch have been designated "sediment." However, physical character of the samples is similar to on-site soils except that they were collected from within a defined drainage ditch. The drainage ditch actually consists of a gently sloping area vegetated with grass that is routinely mowed as a part of the yard area of the facility. Sampling locations are shown on Figure 4-2. Two samples per location were retained for analysis of lead and arsenic content at depths of 0-6 inches and 6-12 inches. The samples were created by mixing the material recovered in these intervals in a stainless steel bowl with a disposable scoop and placing a representative portion into



a laboratory-provided jar. Each jar was labeled and placed on ice in a cooler until delivered for analysis.

Because the analytical results indicated impact by metals in the deeper interval, additional samples were collected from every other boring (five borings) advanced in the drainage ditch during December 2001. These locations were placed immediately adjacent to R2SED-1, R2SED-3, R2SED-5, R2SED-7 and R2SED-9. Samples were collected as previously described from depths 12-18 inches and 18-24 inches bgs intervals at each location for analysis of lead and arsenic.

4.4.2.3 Off-Site Soil Sampling

During August, soil samples were collected from 45 sampling locations on the Citizens Gas, Americold, Howard and Lyon properties located west and north of the Site. Samples were collected based on a grid pattern with a 200 foot node spacing. The location were identified as R2SB-1 through R2SB-50 with samples collected at depths of 0-3 inches and 3-10 inches for analysis of arsenic and lead. Sample location are shown on Figure 4-3. The samples were created by homogenizing the material recovered from each interval in a stainless steel bowl with a disposable scoop and placing a representative portion into a laboratory-provided jar. Each jar was labeled and place on ice in a cooler until delivered for analysis. No sample was collected from location R2SB-31, which was on a Global Properties parcel where access was denied.

Four additional sampling locations were selected along the western boundary of the Citizens Gas property to establish naturally occurring background concentrations of arsenic. These locations were identified as R2BG-1 through R2BG-4 and are considered to be outside the area affected by the Refined Metals operation. Samples were collected from depths of 0-3 inches (the uppermost soil horizon) and 3-10 inches (the next soil horizon) for analysis as previously described.

Based on analytical results of samples collected in August and background concentrations calculated from those results, five former and two new locations were sampled on the Citizens Gas property,



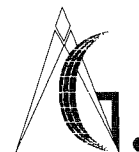
and one location was sample on the Schumanger Machinery property (adjacent to east of the Site across Arlington Avenue) in December. These samples were intended to further delineate arsenic and lead impacts. Samples were collected and handled as previously described. Sampling locations are shown on Figure 4-3. The locations resampled on the Citizens Gas property included R2SB-1, R2SB-2, R2SB-3, R2SB-4 and R2SB-13. Samples were collected at depths of 0-3 inches, 6-9 inches, 12-15 inches and 24-27 inches from boring advanced immediately adjacent to the prior locations and identified as R2SB-1A-A, R2SB-1A-B, R2SB-1A-C, etc. The new locations on the Citizens Gas property were located approximately 200 feet west of R2SB-20 and R2SB-4 and were identified as R2SB-52 and R2SB-53, respectively. The boring on the Schumanger property was designated as R2SB-51.

4.4.2.4 Off-Site Sediment Sampling

The Phase II RFI Work Plan proposed the collection of sediment samples from six locations within a drainage near the northern property line. The drainage ditch is situated within a right-of-way that formerly belonged to Conrail, which has since been sold to CSX Transportation. AGC attempted to gain access to the right-of-way on multiple occasions, without success. As a result, no sediment samples were collected from these off-site locations.

4.5 SUPPLEMENTAL SURVEY

The Schneider Corporation, an Indiana licensed surveyor, located all soil and sediment sampling locations for the purpose of accurately representing the horizontal datum of the sampling locations in the state-plane coordinate system. In addition, both the existing and the newly installed monitoring wells were surveyed for vertical and horizontal datum in the state-plane coordinate system.



5.0 RESULTS

5.1 INTRODUCTION

Soil lead concentrations are being delineated to the EPA Region IX preliminary remediation goals (PRGs). As specified in the Phase II RFI Work Plan, arsenic in soil concentrations are being delineated to background concentrations. The calculated background arsenic in soil concentrations are 10.53 mg/kg for surface soil (0-3 inch) and 7.91 mg/kg (>3 inches) for subsurface soils. As stated earlier, samples collected from the drainage ditches have been referred to as "sediment" in this report; however, because of the physical character of the material sampled and geomorphic setting, they are compared to the soil standards discussed above.

As specified in the Phase II RFI Work Plan, groundwater is also being evaluated against a calculated background arsenic level determined using samples collected from MW-9. For arsenic that value is 8.5 µg/l. Background is calculated by the mean arsenic concentration in MW-9 plus one standard of deviation. The current EPA Region IX PRG table does not provide a standard for lead in groundwater; therefore, we are utilizing the EPA Action Level of 15 µg/l. In addition to lead and arsenic Phase II RFI groundwater samples were analyzed for antimony, barium, cadmium, chromium, mercury, selenium and silver, the results of which were compared to the respective EPA Region IX PRGs.

5.2 HYDROGEOLOGIC INVESTIGATION

5.2.1 Phase II RFI Well Installation

During the Phase II RFI, four additional shallow groundwater monitoring wells were installed at the Site, bringing the total number of wells screened across the unconfined aquifer to nine. One of these wells, MW-6SR, replaced MW-6S, which was installed during the Phase I RFI but was unable to yield a sufficient volume of water to produce a representative ground water sample. The locations



of the other three wells, MW-7, MW-8, and MW-9, are shown on Figure 4-1. MW-9 is intended to represent background.

5.2.2 Phase II RFI Groundwater Quality

Two rounds of ground water samples were collected from the nine shallow monitoring wells during the Phase II RFI for analysis of eight RCRA metals and antimony. Each sampling event was preceded by the collection of static water level measurements from each well. These measurements recorded the depth to water below a surveyed point on the top of each well casing. The wells were purged and sampled using the low-flow sampling technique during September and December, 2001. Samples from the September sampling event were analyzed for total metals concentrations. The samples from the December sampling event were analyzed for both total and dissolved (filtered) concentrations. Analytical results from the sampling events are summarized on Table 5-1.

5.2.2.1 September 2001 Sampling Event

The analytical results and Validation Report for samples collected during the September 2001 groundwater sampling event are included in Appendix B. A potentiometric surface map prepared from the September static water level data is presented as Figure 5-1. The water table elevation for MW-6SR appears to be anomalous. This data point was excluded in the preparation of the map.

Total arsenic was found in concentrations ranging from BDL (1.0) $\mu\text{g/l}$ in MW-4 to 33 $\mu\text{g/l}$ in MW-1. Arsenic concentrations were detected above the background concentration in MW-1, MW-2, and MW-3 and MW-7 at 33 $\mu\text{g/l}$, 12 $\mu\text{g/l}$, 9.7 $\mu\text{g/l}$, and 25 $\mu\text{g/l}$, respectively. Total lead was detected above the USEPA Action Level value of 15 $\mu\text{g/l}$ in MW-2, MW-7 and MW-8 at 49 $\mu\text{g/l}$, 19 $\mu\text{g/l}$, and 21 $\mu\text{g/l}$, respectively. The samples from the other wells were reported to contain lead at concentrations ranging from BDL (<1 $\mu\text{g/l}$) in MW-4 and MW-6 to 5.9 $\mu\text{g/l}$ in MW-1. No other targeted analyte was reported above the EPA Region IX PRG value.



5.2.2.2 December 2001 Sampling Event

The analytical results and Validation Report for samples collected during the December 2001 groundwater sampling event are included in Appendix C. A potentiometric surface map prepared from the December 2001 static water level data is presented as Figure 5-2. The water table elevation measurement for MW-6SR appears to be anomalous. This data point was excluded in the preparation of the map.

During the December event, two separate sets of samples were collected. One set of samples was field-filtered with a 45 micron filter for analysis of dissolved metals. This was done to determine if total metal concentrations detected during the September 2001 sampling event and those to be detected during the December 2001 sampling event were representative of actual groundwater conditions. Field filtering reduces the possibility of artificially high metals concentrations.

Total arsenic was found at concentrations ranging from BDL (1.0 $\mu\text{g/l}$) in MW-4 to 27 $\mu\text{g/l}$ in MW-1. Total arsenic concentrations were detected above the background concentration in MW-1, MW-2, MW-3, MW-7, and MW-8 at 27 $\mu\text{g/l}$, 12 $\mu\text{g/l}$, 11 $\mu\text{g/l}$, 26 $\mu\text{g/l}$, and 13 $\mu\text{g/l}$, respectively. Dissolved arsenic was found at concentrations from BDL in MW-4 to 30 $\mu\text{g/l}$ in MW-7. Dissolved arsenic concentrations were detected above the background concentration in MW-1, MW-2, MW-7, and MW-8 at 22 $\mu\text{g/l}$, 9.8 $\mu\text{g/l}$, 30 $\mu\text{g/l}$, and 14 $\mu\text{g/l}$, respectively. Total lead was reported at concentrations ranging from BDL (MW-3 and MW-9) to 84 $\mu\text{g/l}$ in MW-2. Total lead was detected above the Action Level at concentrations of 84 $\mu\text{g/l}$, 47 $\mu\text{g/l}$ and 23 $\mu\text{g/l}$ in the samples from MW-2, MW-7, and MW-8, respectively. Dissolved lead was not found above the USEPA Action Level. No other targeted analyte was reported above the EPA Region IX PRG of the collected samples.

5.2.3 Permeability Analysis

The laboratory report from GeoSystems is included in Appendix G. The sieve analysis identified all samples as sandy silt or silt with sand (USCS Class ML). The vertical coefficient of permeability



calculated from Triaxial Variable Head Permeability Test was 4.90×10^{-9} cm/sec from MW-6SR 10-12 feet and 4.03×10^{-8} cm/sec for MW-6SR 16-18 feet. Undisturbed samples could not be collected from MW-7 and MW-9 because of material characteristics therefore samples were collected for grain size analysis. The grain distribution curves for the samples from MW-7 and MW-9 were very similar to the MW-6SR 16-18 sample and would be expected to have similar permeabilities.

5.3 SOIL INVESTIGATION

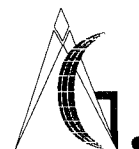
5.3.1 On-Site Soil Results

The analytical results and Validation Report for the on-site soil samples collected and analyzed to supplement previously completed Closure Investigation activities will be provided under separate cover to IDEM. Results of on-site soil sampling performed as part of the Phase I RFI are provided on Figure 4-3.

5.3.2 On-Site Sediment Results

The analytical results and Validation Report for the sediment samples collected from the ditch along East Arlington Avenue are included in Appendix E. The data are summarized on Table 5-3 and included on Figure 4-2. All samples with an "A" suffix indicate they were collected in the 0-6 inch interval. Concentrations of lead in the 0 to 6 inch horizon ranged from 84 mg/kg at R2SED-10 to 8,430 mg/kg in R2SED-6. Lead exceeded the EPA Region IX PRG for non-residential soils at 9 out of 10 sample locations at this depth. Concentrations of arsenic ranged from 9.4 mg/kg in R2SED-10 to 46 mg/kg in R2SED-5 at this depth. Arsenic exceed background soil concentrations at 7 out of 10 locations.

All samples with an "B" suffix indicate they were collected in the 6-12 inch interval. Concentrations of lead ranged from 25 mg/kg at R2SED-10 to 6,020 mg/kg in R2SED-3 with 7 out of 10 samples from this depth exceeding the EPA Region IX PRG for non-residential soil. Concentrations of



arsenic ranged from 7.2 mg/kg in R2SED-10 to 35 mg/kg in R2SED-6 with 9 out of 10 exceeding the background soil concentration.

All samples with an "C" suffix indicate they were collected in the 12-18 inch interval. Concentrations of lead ranged from 19 mg/kg at R2SED-1 to 622 mg/kg in R2SED-3 and none of the samples from this depth exceeded the EPA Region IX PRG for soil. Concentrations of arsenic ranged from 5.7 mg/kg in R2SED-5 to 13 mg/kg in R2SED-3 and R2SED-7 at this depth and 4 out of 5 samples exceeded the background concentration for arsenic.

All samples with an "D" suffix indicate they were collected in the 18-24 inch interval. Concentrations of lead ranged from 20 mg/kg at R2SED-5 to 691 mg/kg in R2SED-3 and none of the samples from this depth exceeded the EPA Region IX PRG for soil. Concentrations of arsenic ranged from 5.5 mg/kg in R2SED-1 to 12 mg/kg in R2SED-3 at this depth and 3 out of 5 samples exceeded the background concentration for arsenic.

5.3.3 Off-Site Soil Results

The analytical results and Validation Report for the off-site soil samples collected and analyzed for lead and arsenic are included in Appendix D. The data are summarized on Table 5-2 and presented on Figure 4-3. Samples with an "A" suffix were collected in the 0-3 inch interval. Samples with an "B" suffix were collected in either the 3-10 inch or 6-9 inch interval as indicated on Table 5-3. Samples with an "C" suffix were collected in the 12-15 inch interval. Samples with an "D" suffix were collected in the 24-27 inch interval and held as archive samples. Based on the results of the "C" interval samples, none of the "D" interval samples were analyzed.

Samples from locations R2BG-1 through R2BG-4 were collected on the Citizens Gas property from the 0-3 inch (surface) and 3-10 inch (subsurface) intervals to determine background arsenic concentrations. Based on the results of these samples, arsenic background concentrations of 10.53



mg/kg for surface soil (0-3 inch) and 7.91 mg/kg for subsurface (>3 inch) soil were calculated. The calculations for these values is included in Appendix F.

Samples collected on the Citizens Gas property included 26 locations for lead and arsenic characterization (R2SB-1 through R2SB-24, R2SB-52 and R2SB-53). Lead concentrations in the 0-3 inch interval ranged from 25 mg/kg in R2SB-10 to 7,390 mg/kg in R2SB-13. Twenty of 26 samples (77%) had lead concentrations below the 1,000 mg/kg USEPA non-residential PRG. The average concentration of these 20 samples was 393 mg/kg. Arsenic concentrations in the 0-3 inch interval ranged from 4.6 mg/kg in R2SB-52 to 141 mg/kg in R2SB-1. Twelve of 26 samples (46%) of the samples from this interval had arsenic concentrations below the calculated background surface concentration of 10.53 mg/kg. The average concentration of these 12 samples was 8.52 mg/kg.

Lead concentrations in the 3-10 inch interval ranged from 5.7 mg/kg in R2SB-52 to 4,120 mg/kg in R2SB-2. Twenty-three of the 26 samples (88%) from this interval had lead concentrations below 1,000 mg/kg. These 23 samples has an average concentration of 150.2 mg/kg. Arsenic concentrations in the 3-10 inch interval ranged from 3.3 mg/kg in R2SB-52 and R2SB-53 to 50 mg/kg in R2SB-1. Eight of the 26 samples (31%) of the samples from this interval had arsenic concentrations below the calculated background subsurface concentration of 7.91 mg/kg. These samples have an average concentration of 5.11 mg/kg. A data summary and calculations are provided in Appendix F.

Samples from the 12-15 inch interval were submitted for analysis from locations R2SB-1 through R2SB-4 and R2SB-13. Lead concentrations in this interval exceeded 1,000 mg/kg in R2SB-1, R2SB-3 and R2SB-4. Arsenic concentrations in the samples from this interval exceeded the subsurface background concentration of 7.91 mg/kg in R2SB-1 (8.3 mg/kg) and R2SB-4 (18 mg/kg).



Nineteen locations were sampled on the adjacent properties to the north of the Site for lead and arsenic characterization. Lead concentrations in the 0-3 inch interval ranged from 34 mg/kg in R2SB-46 and R2SB-50 to 422 mg/kg in R2SB-40, with an average concentration of 199.6 mg/kg. None of these samples exceeded 1,000 ppm lead. Arsenic concentrations in this interval ranged from 3.7 mg/kg in R2SB-35 to 9.2 mg/kg in R2SB-37, with an average concentration of 6.8 mg/kg. None of these samples exceeded the background concentration. Lead concentrations in the 3-10 inch interval ranged from 24 mg/kg in R2SB-47 to 509 mg/kg in R2SB-37, with an average concentration of 111.3 mg/kg. None of these samples exceeded 1,000 ppm lead. Arsenic concentrations in this interval ranged from 3.9 mg/kg in R2SB-42 to 9.7 mg/kg, in R2SB-49, with an average concentration of 6.3 mg/kg. Four of these samples slightly exceeded the background concentration.

One location, R2SB-51, was sampled east of the Site, across Arlington Avenue. Samples were analyzed for lead and arsenic from the 0-3 inch and 6-9 inch intervals. Lead concentrations of 285 mg/kg and 199 mg/kg and arsenic concentrations of 6.6 mg/kg and 7 mg/kg, respectively, were detected in these intervals.



6.0 SITE CHARACTERIZATION SUMMARY

6.1 GROUNDWATER

Groundwater is encountered on-site at approximately 10 feet (shallow groundwater) and 75 feet bgs (middle perched zone). Figures 5-1 and 5-2 display the potentiometric surface for shallow groundwater based upon data collected during the September and December 2001 groundwater sampling events. Groundwater flow in shallow groundwater appears to be to the southeast. Boring logs for the deep borings on-site indicate that a substantial thickness of silt and clay is deposited below the shallow and middle perched zones of saturation and overlies the regional uppermost semi-confined water bearing zone. The regional uppermost semi-confined aquifer was not encountered in any of the deep borings, which were terminated at a depth of 130 feet bgs, as specified in the Phase I RFI Work Plan. As noted by Meyer (1975), the three semi-confined aquifers are not aerally continuous throughout the county and sections of them are often divided by large areas of silt and clay. Consequently, it is noted that in some portions of the County, all of the aquifers may not be encountered.

The hydraulic conductivity in these regional silt and clay deposits is low (less than 1×10^{-7} centimeters per second) makes these deposits semi-pervious. Consequently, the shallow groundwater on the Site is a perched zone that extends aerally across the Site, and the underlying thick layers of clays and silts serve to restrict infiltration to the regional semi-confined water bearing zone, where it is present. The middle perched zone appears to be less continuous across the Site.

During the Phase I RFI, groundwater was collected from both the shallow and deep wells during two separate sampling events. A low yield from MW-6S prevented the collection of a representative sample and the well was replaced by MW-6SR during the Phase II RFI. The analytical results from the Phase I RFI sampling events did not indicate groundwater impact to the deep wells at concentrations above the USEPA Action Level for lead. Arsenic was detected above the background concentration (for the shallow aquifer) in both deep wells. Total lead was detected above the Action



Level of 15 µg/l in one of the shallow wells (MW-2). Arsenic was detected above the background concentration in four shallow wells during the Phase I RFI.

During the Phase II RFI, groundwater was collected from the shallow wells on-site during two sampling events in September and December 2001. The current EPA Region IX PRG table does not include a value for lead in groundwater. Therefore the USEPA Action Level of 15 µg/l was used as the comparison criteria for groundwater results in the Phase II RFI. Total lead was detected at concentrations above the Action Level in MW-2, MW-7 and MW-8 during both events. During the December event, a second set of samples was collected and field-filtered to evaluate if entrained soil in the unfiltered samples was affecting the analytical results. The results of the field-filtered samples were below the Action Level indicating increasing turbidity measurements recorded during purging is likely causing elevated lead results in the samples collected from these wells. Lead was not detected in the other shallow or deep on-site wells at levels above the Action Level.

Arsenic was detected above the background concentration in MW-1, MW-2, MW-3, and MW-7 during both sampling events, and in MW-8 during the December event. Field filtering during the December event generally lowered the reported concentrations but not below the background concentration, except in MW-3.

6.2 SOIL

6.2.1 On-Site Soil

Samples were collected from 58 locations during the Phase I RFI at depths varying from 0 to 30 inches. Elevated concentrations of lead and arsenic were reported in areas in and around the former manufacturing areas above the applicable PRG and background criteria. Additional on-site sampling was not deemed necessary during the Phase II RFI because sampling to date has adequately defined on-site soil addressed as part of the RFI.



6.2.2 Off-Site Soil

During the Phase I RFI, soil samples were collected from four locations on the Wavetech property located to the south of the Site at 0-3 inch and 3-10 inch intervals. Concentrations of lead above the EPA Region IX PRG were not detected in any of these samples. Arsenic was not reported above the calculated background concentration except in the 3-10 inch sample from RSB-66. The arsenic concentration in this sample was 8.1 mg/kg versus the background value of 7.91.

Soil samples were collected from 19 locations on the properties to the north and east of the Site during the Phase II RFI. Concentrations of lead did not exceed the EPA Region IX PRG in these samples. Arsenic slightly exceeded background concentrations in four of these samples.

Soil samples were collected from 26 locations on the Citizen's Gas property located to the west of the Site at 0-3 inch and 3-10 inch intervals, with five of the locations also sampled at a depth of 12-15 inches. During the Phase II RFI, lead was detected above the EPA Region IX PRG at locations along the western site boundary and adjacent to the drainage swale along the southern boundary of the Citizens Gas property that abuts Big Four Road.

Drawing 6-1 presents an isopleth of soil lead concentrations showing the extent of lead-affected soil that exceeds the action limit of 1,000 mg/kg. This drawing indicates that the lead-affected soil above the Action Level is restricted to the site boundaries, the eastern edge of the Citizens Gas property, and in the drainage ditches along the west side of Arlington Avenue (on-site) and north side of Big Four Road (bordering Citizens Gas).

6.2.3 On-Site Sediment

Sediment samples collected from the drainage ditch along Arlington Avenue indicate concentrations of lead above the PRG for lead in soil to a depth of 12 inches. Concentrations of arsenic above the



calculated subsurface background concentrations were detected in the deepest sample at seven of the ten sediment sampling locations.



7.0 CONCLUSIONS

The following conclusions can be drawn from the findings of the RFI.

Groundwater

- Groundwater in the shallow zone of saturation near the former manufacturing area flows radially toward the northeast through the southeast.
- The detection of lead at concentrations above the Action Level by the total metals analysis appears to be the result of entrained soil in the sample. Field-filtering prior to sample preservation and analysis of dissolved concentrations yields lead values below the Action Level.
- Except in MW-3, where arsenic exceeded the calculated background concentration, field-filtering did not reduce arsenic concentrations below the calculated background concentration. This indicates that the arsenic detected in the samples is occurring in a dissolved or <45 micron state.
- Arsenic values detected in the groundwater were above the background values calculated from MW-9, although the direct impact of historic site operations relative to regional background is unclear. Additional sampling of the monitoring wells as described in Section 8.0 will help further develop this relationship.

Soil

- Areas of metals-affected soil have been identified and delineated on the Site. Lead appears to be the primary COC.



- Arsenic and lead affected soil has also been identified and largely delineated to be within the site boundaries to below both applicable PRGs and/or background concentrations. Some affected soil along the common boundary with Citizens Gas and along Arlington Avenue corresponds to drainage features that may have been caused by overland flow during storm events.



8.0 RECOMMENDATIONS

Based on the results of the Phase I and Phase II RCRA Facility Investigation and sampling performed as part of the Indiana Department of Environmental Management (IDEM) Closure Investigation, Exide Technologies believes that the vertical and horizontal extent of impact to soils from historic plant operations is adequately defined to allow progression into the Corrective Measures Study. Relative to groundwater, it is recommended that additional investigation activities be performed for the purpose of more accurately defining groundwater flow patterns in the northern portions of the property and to allow accumulation of additional groundwater data. Recommendations are as follows:

Soils (On-Site and Off-Site) - No additional investigation deemed necessary.

Groundwater - Groundwater flow patterns towards the northeast remain partially defined. To provide additional information, AGC and Exide propose the installation of two more monitoring wells in this area. To optimize the location of the wells, AGC recommends installation of two to three temporary piezometers in the northern portions of the Site. Groundwater levels will be taken within 24 hours of installation and based on those results, the locations for two new monitoring wells will be chosen. The wells will be installed, developed, and documented using the same techniques followed during the Phase II RFI. The temporary piezometers will be abandoned immediately after well installation. No samples will be collected from the piezometers because of the poor data quality commonly associated with piezometers. One round of sampling will be performed for all the shallow monitoring wells on-site following installation, development, and a minimum two week wait period utilizing the sampling protocol employed during previous sampling events. The analytical data will be used to further evaluate arsenic levels in shallow groundwater.

Sediment - Sediment samples were not acquired from the edge of the railroad right-of-way north of the Site. Exide has resumed pursuit of an access agreement with the Rail Road so



that the samples proposed in the Phase II RFI Work Plan can be collected during the piezometer and monitoring well installation. In addition, four additional locations in the drainage ditch along Arlington Avenue have been selected for sediment sampling. These locations are north of location R2SED as shown on Drawing 6-1. These samples will be collected at a spacing of 75 feet and include a 0 to 6 and 6 to 12 inch deep sample.

Following collection, the new data will be added to the existing database and utilized for the purpose of conducting a Risk Assessment to develop a site specific lead remediation value.



9.0 INTERIM MEASURES

The interim measures discussed in the Work Plan submittal with the Phase II RFI Work Plan were implemented during the September 2001 sampling events and remain in place.



TABLES



TABLE 2-1

**Principle Materials Used On-Site
Refined Metals Facility
Beech Grove, Indiana**

<u>Material</u>	<u>Use</u>
Lead batteries and scrap metal	Raw material for refining
Coke	Furnace fuel
Oxygen	Furnace oxidant
Natural gas	Furnace fuel
Antimony and tin	Alloys added to lead
Sodium hydroxide	Removal of antimony and tin in refining kettles
Red phosphorus	Removal of copper from refining kettles
Scrap iron	Furnace additive to remove sulfur
Magnesium hydroxide	Wastewater neutralization and flocculent
Polymers and chelating agents	Wastewater treatment
Muriatic (hydrochloric) acid	Cleaning wastewater filter press
Lime and sodium bicarbonate	Neutralizing spills

TABLE 4-1
RMC - BEECH GROVE PHASE II RFI
Monitoring Well Construction Details

Well ID	Installation Date	Installation Method	Inner Casing Diameter (in.)	Outer Casing Diameter (in.)/Depth (ft.bgs)	Total Depth (ft. bgs)	Ground Surface Elevation (ft.) ^{2,3,4}	TOIC Elevation (ft.)	Depth To Water (TOIC) ¹	Groundwater Table Elevation (ft.)	Screen Interval (ft.)	Comments
1	10/11/1990	Auger	2	10/30	30.5	845.62	846.99	9.46	837.53	20-30	
2	10/11/1990	Auger	2	10/30	30.5	845.73	846.9	8.61	838.29	20-30	
2D	8/12/1999	HSA, Roto-Sonic	4	6/80.0	110	845.91	N/A	21.04	-	70-80	
3	10/17/1990	Auger	2	10/21	21.5	846.44	848.06	11.42	836.64	11-21	
4	10/15/1990	Auger	2	10/22	26	837.57	839.02	5.61	833.41	12/22	
5	10/12/1990	Auger	2	10/25	25.5	839.65	840.84	3.46	837.38	15-25	
6S	8/12/1999	HAS	2	6/17.0	31	843.73	N/A	10.98	-	7-17	Abandoned
6D	8/12/1999	HSA, Roto-Sonic	4	6/96.0	123	843.82	N/A	11.03	-	87-97	
6SR	8/21/2001	HSA	4	6/20	30	842.833	845.25	19.19	826.06	20-30	
7	8/22/2001	HSA	4	6/15	28	845.087	844.61	6.35	838.26	25-15	
8	8/21/2001	HSA	4	6/20	30.5	843.805	843.55	8.37	835.18	20-30	
9	8/22/2001	HSA	4	6/15	26	844.471	846.87	9.37	837.5	25-15	

Notes:

1. Depth to Water taken during September 21 2001, except 6S (Sept 1999).
2. MW-1 through 5 Ground Surface Elevations taken from 8/6/99 Schneider survey.
3. MW-2D, 4, 6S, 6D GSE taken from 10/7/99 Schneider survey.
4. MW-7S, 8S, and 9 GSE taken from 9/18/01 Schneider survey.

ft. bgs - feet below ground surface

HSA - hollow stem auger

in - inches

N/A - not available



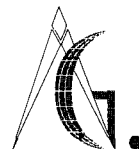
TABLE 5-1
RMC BEECH GROVE PHASE II RFI
Groundwater Analytical Results

Sample Location		MW-1						MW-2						MW-3						MW-4						MW-5					
Sample Date		9/22/2001			12/10/2001			9/22/2001			12/10/2001			9/22/2001			12/11/2001			9/24/2001			12/11/2001			9/24/2001			12/11/2001		
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																															
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	33		1	27		1	12		1	12		1	9.7		1	11		1		U	1		U	1	7.6		1	5.4		1
Barium	ug/L	101		10	93		10	31		10	48		10	102		10	98		10	197		10	187		10	170		10	150		10
Cadmium	ug/L	0.2		0.2		U	0.2	0.3		0.2	0.4		0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L	3.1		1	4		1		U	1	4.8		1		U	1		U	1		U	1		U	1		U	1		U	1
Lead	ug/L	5.9		1	3.4		1	49		1	84		1	1.3		1		U	1		U	1	1.5		1	2		1	2.1		1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L	6.1	J	2	4		2		U	2	3.1		2		U	2	3.7		2		U	2		U	2		U	2		U	2
Silver	ug/L		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2
Dissolved Metals																															
Antimony	ug/L		NA			U	10		NA			U	10		NA			U	10		NA			U	10		NA			U	10
Arsenic	ug/L		NA		22	J	1		NA		9.8	J	1		NA		8.4	J	1		NA			UJ	1		NA		3.7	J	1
Barium	ug/L		NA		85		10		NA		25		10		NA		113		10		NA		203		10		NA		170		10
Cadmium	ug/L		NA			U	0.2		NA			U	0.2		NA			U	0.2		NA			U	0.2		NA			U	0.2
Chromium	ug/L		NA		8.9	J	1		NA		6.8	J	1		NA		6.6	J	1		NA		3.4	J	1		NA		4	J	1
Lead	ug/L		NA			U	1		NA		6.2		1		NA			U	1		NA			U	1		NA			U	1
Selenium	ug/L		NA		4.9	J	2		NA		3.7	J	2		NA		3.7	J	2		NA			UJ	2		NA			UJ	2

Sample Location		MW-6						MW-7						MW-8						MW-9					
Sample Date		9/24/2001			12/11/2001			9/22/2001			12/11/2001			9/22/2001			12/11/2001			9/22/2001			12/10/2001		
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																									
Antimony	ug/L		U	10		U	10		U	10		U	10	14		10		U	10		U	10		U	10
Arsenic	ug/L	1.9		1	2.2		1	25		1	26		1	5.1		1	13		1	7.7		1	4		1
Barium	ug/L	92		10	79		10	21		10	25		10	133		10	123		10	137		10	68		10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2	0.8		0.2	0.4		0.2		U	0.2		U	0.2
Chromium	ug/L		U	1		U	1		U	1	2.8		1		U	1		U	1		U	1	2.2		1
Lead	ug/L		U	1	1.3		1	19		1	47		1	21		1	23		1	1.6		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2		U	2	3.7	J	2	5.7		2		U	2		U	2		U	2		U	2
Silver	ug/L		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2
Dissolved Metals																									
Antimony	ug/L		NA			U	10		NA			U	10		NA			U	10		NA			U	10
Arsenic	ug/L		NA		1.4	J	1		NA		30	J	1		NA		14	J	1		NA		3.7	J	1
Barium	ug/L		NA		89		10		NA		23		10		NA		135		10		NA		68		10
Cadmium	ug/L		NA			U	0.2		NA			U	0.2		NA		0.3		0.2		NA			U	0.2
Chromium	ug/L		NA		3.8	J	1		NA		13	J	1		NA		3.8	J	1		NA		3.8	J	1
Lead	ug/L		NA			U	1		NA		2.5		1		NA		11		1		NA			U	1
Selenium	ug/L		NA			UJ	2		NA		6.5	J	2		NA			UJ	2		NA			UJ	2

Notes:
Q - Qualifier
RL - Reporting Limit
U - Undetected
J - Estimated
FD - Field Duplicate
NA - Not Analyzed

TABLE 5-2
RMC - BEECH GROVE SUPPLEMENTAL CLOSURE INVESTIGATION
Soil Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Antimony			Arsenic			Cadmium			Lead		
				Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
CSB-1A-A	295496	0-3"	12/14/2001	3.4		1	3.2		1			0.5	903		32
CSB-1A-B	295497	6-9"	12/14/2001		U	1	1.5		1		U	0.5	18		0.6
CSB-1A-C	295498	12-15"	12/14/2001		U	1	1.5		1		U	0.5	44		0.6
CSB-1A-D	295499	24-27"	12/14/2001	2660	J	100	989		13	1000	J	13	249000		6250
CSB-1A-E	295500	36-39"	12/14/2001	16	J	1	6.8		1	1.7		0.5	847		13
CSB-1A-F	297370	48-51"	12/14/2001	1.7		1	8.5		1	2		0.5	170		2.5
CSB-1A-G	297371	60-63"	12/14/2001	1.6		1	5.6		1		U	0.5	65		1
CSB-1A-H	297372	72-75"	12/14/2001	2		1	6		1		U	0.5	82		1
CSB-1A-I	297373	84-87"	12/14/2001	1.4		1	5.7		1		U	0.5	47		0.6
CSB-1A-J	297374	96-99"	12/14/2001	3.6		1	5.7		1		U	0.5	144		2.5
CSB-10A-A	295526	0-3"	12/14/2001	5.7	J	1	4.5		1	0.59		0.5	1780		63
CSB-10A-B	295527	6-9"	12/14/2001	31	J	1	6.1		1	1.3		0.5	1210		32
CSB-10A-C	295528	12-15"	12/14/2001	1720		50	433		6.25	132		0.625	256000	J	6250
CSB-10A-D	295531	24-27"	12/14/2001	4260	J	100	2730		63	527		6.3	475000		12500
CSB-10A-E	295532	36-39"	12/14/2001	6.7		1	7.1	J	1	0.61		0.5	253		6.3
CSB-10A-F	297375	48-51"	12/14/2001	2960		50	1700		50	363		5	288000		5000
CSB-10A-G	297376	60-63"	12/14/2001	12		1	28		1	7.2		0.5	1090		25
CSB-10A-H	297377	72-75"	12/14/2001	1.8		1	11		1	5.1		0.5	101	J	2.5
CSB-10A-I	297379	84-87"	12/14/2001	6.1		1	44		1	20		0.5	365		5
CSB-13A-A	295508	0-3"	12/14/2001	80		5	11		1	64		1.3	2300		63
CSB-13A-B	295509	6-9"	12/14/2001	197		5	22		1	29		0.5	1070		13
CSB-13A-C	295510	12-15"	12/14/2001	5		1	6.6		1	36		0.5	75		1.3
CSB-13A-D	295511	24-27"	12/14/2001	1.9		1	5.9		1	1.7		0.5	39		0.6
CSB-13A-E	295512	36-39"	12/14/2001	2.9	J	1	6		1	0.99		0.5	27		0.6
CSB-26A-A	295489	0-3"	12/14/2001	6.4		1	12		1	46		0.5	174		3.2
CSB-26A-B	295490	6-9"	12/14/2001	1.7		1	11		1	40		0.5	88		1.3
CSB-26A-C	295491	12-15"	12/14/2001	1		1	6.4		1		U	0.5	40		0.6
CSB-26A-D	295492	24-27"	12/14/2001		U	1	6.2		1	0.54		0.5	25		0.6
CSB-26A-E	295493	36-39"	12/14/2001		U	1	5.8		1		U	0.5	23		0.6
CSB-28A-A	295514	0-3"	12/14/2001	5		1	53		1	17		0.5	30		0.6
CSB-28A-B	295515	6-9"	12/14/2001		U	1	5.1		1		U	0.5	13		0.6
CSB-28A-C	295516	12-15"	12/14/2001		U	1	7.9		1		U	0.5	27	J	0.6
CSB-28A-D	295517	24-27"	12/14/2001		U	1	6.5		1		U	0.5	14		0.6
CSB-28A-E	295518	36-39"	12/14/2001		U	1	9.4		1		U	0.5	16		0.6
CSB-30A-A	295520	0-3"	12/14/2001	63		2.5	30	J	1	4.2		0.5	2360		63
CSB-30A-B	295521	6-9"	12/14/2001	14		1	13	J	1	1.3		0.5	366		6.3
CSB-30A-C	295523	12-15"	12/14/2001	7	J	1	9.1	J	1	0.83		0.5	243		6.3
CSB-30A-D	295524	24-27"	12/14/2001	1.2		1	6.6	J	1		U	0.5	32		0.6
CSB-30A-E	295525	36-39"	12/14/2001		U	1	6.6	J	1		U	0.5	13	U	0.6
CSB-32A-A	295533	0-3"	12/14/2001	2190	J	100	394		6.3	158		6.3	164000		6250
CSB-32A-B	295534	6-9"	12/14/2001	1060	J	50	199		3.2	47		3.2	90100		3130
CSB-32A-C	295535	12-15"	12/14/2001	1010	J	25	230		3.2	38		3.2	64000		6250
CSB-32A-D	295536	24-27"	12/14/2001	2.7		1	8	U	1		U	0.5	40		0.6
CSB-32A-E	295537	36-39"	12/14/2001	1.5		1	6.5	J	1		U	0.5	20	U	0.6
CSB-35A-A	295478	0-3"	12/14/2001	1280		25	154		6.3	83		3.2	70400		1250
CSB-35A-B	295479	6-9"	12/14/2001	5.3		1	6.1		1	0.66		0.5	279		6.3
CSB-35A-C	295480	12-15"	12/14/2001	3150		100	408		13	144		13	350000		6250
CSB-35A-D	295481	24-27"	12/14/2001	4.9		1	6		1	0.62		0.5	285		6.3
CSB-35A-E	295482	36-39"	12/14/2001	3.9		1	6.3		1	0.99		0.5	499		13
CSB-35A-F	295483	48-51"	12/14/2001	1.7		1	6.3		1		U	0.5	69		1.3
CSB-35A-G	295484	60-63"	12/14/2001	6.3		1	6.6		1	0.89		0.5	156		3.2
CSB-35A-H	295485	72-75"	12/14/2001	27	J	1	8.1		1	1.5	J	0.5	1520	J	32
CSB-35A-I	295486	84-87"	12/14/2001		U	1	5.9		1		U	0.5	11		0.6
CSB-35A-J	295487	96-99"	12/14/2001		U	1	4.1		1		U	0.5	11		0.6
CSB-38A-A	295503	0-3"	12/14/2001	156	J	2.5	67		6.3	110		6.3	6200		125
CSB-38A-B	295504	6-9"	12/14/2001		U	1	7.9		1		U	0.5	14		0.6

TABLE 5-2
RMC - BEECH GROVE SUPPLEMENTAL CLOSURE INVESTIGATION
Soil Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Antimony			Arsenic			Cadmium			Lead		
				Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
CSB-38A-C	295505	12-15"	12/14/2001		U	1	9.3		1		U	0.5	22		0.6
CSB-38A-D	295506	24-27"	12/14/2001		U	1	2.5		1		U	0.5	12		0.6
CSB-38A-E	295507	36-39"	12/14/2001	6.2		1	8.6		1	6.8		0.5	319		6.3

Notes:

Q - Qualifier

RL - Reporting Limit

J - Estimated

FD - Field Duplicate

Results reported in mg/kg

TABLE 5-2
RMC - BEECHGROVE PHASE II CLOSURE INVESTIGATION
Soil Analytical Results



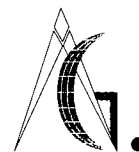
Sample Location	Lab ID	Depth	Sample Date	Arsenic			Lead		
				Result	Q	RL	Result	Q	RL
R2BG-1A	286626	0-3"	8/24/2001	9.8		1		NA	
R2BG-1B	286627	3-10"	8/24/2001	8		1		NA	
R2BG-2A	286628	0-3"	8/24/2001	10		1		NA	
R2BG-2B	286629	3-10"	8/24/2001	7.2		1		NA	
R2BG-3A	286630	0-3"	8/24/2001	6		1		NA	
R2BG-3B	286631	3-10"	8/24/2001	7.5		1		NA	
R2BG-4A	286632	0-3"	8/24/2001	3.1		1		NA	
R2BG-4B	286633	3-10"	8/24/2001	6.6		1		NA	
R2SB-1A	286575	0-3"	8/23/2001	141		3.2	1750		25
R2SB-1A-A	295461	0-3"	12/13/2001	58	J	1	2250		32
R2SB-1A-B	295462	6-9"	12/13/2001	7.6	J	1	609		6.3
R2SB-1A-C	295463	12-15"	12/13/2001	7.8	J	1	4230		32
R2SB-1B	286576	3-10"	8/23/2001	50		1	1080		25
R2SB-2A	286624	0-3"	8/23/2001	19		1	1290	J	25
R2SB-2A-A	295456	0-3"	12/13/2001	16	J	1	918		13
R2SB-2A-B	295457	6-9"	12/13/2001	15	J	1	4120		63
R2SB-2A-C	295458	12-15"	12/13/2001	4.6	J	1	816		6.3
R2SB-2B	286625	3-10"	8/23/2001	10		1	2760	J	63
R2SB-3A	286620	0-3"	8/23/2001	38		1	991	J	13
R2SB-3A-A	295452	0-3"	12/13/2001	36	J	1	1620		32
R2SB-3A-B	295453	6-9"	12/13/2001	19		3.1	1410		32
R2SB-3A-C	295454	12-15"	12/13/2001	6.3	J	1	1330		32
R2SB-3B	286621	3-10"	8/23/2001	10		1	1760	J	25
R2SB-4A	286622	0-3"	8/23/2001	26		1	1980	J	25
R2SB-4A-A	295447	0-3"	12/13/2001	28	J	1	2490		63
R2SB-4A-B	295449	6-9"	12/13/2001	13	J	1	874		13
R2SB-4A-C	295451	12-15"	12/13/2001	18	J	1	1420		32
R2SB-4B	286623	3-10"	8/23/2001	12		1	1380	J	25
R2SB-53-A	295472	0-3"	12/13/2001	8.4	J	1	499		6.3
R2SB-53-B	295473	6-9"	12/13/2001	3.3	J	1	58		0.6
R2SB-5A	286609	0-3"	8/23/2001	10	J	1	121	J	3.2
R2SB-5B	286610	3-10"	8/23/2001	5.5	J	1	68	J	1.3
R2SB-6A	286618	0-3"	8/23/2001	12		1	587	J	6.3
R2SB-6B	286619	3-10"	8/23/2001	11		1	286	J	3.2
R2SB-7A	286615	0-3"	8/23/2001	9.6		1	78	J	1.3
R2SB-7B	286616	3-10"	8/23/2001	13		1	35		0.6
R2SB-8A	286577	0-3"	8/23/2001	13		1	197		3.2
R2SB-8B	286578	3-10"	8/23/2001	8.4		1	51		0.6
R2SB-9A	286579	0-3"	8/23/2001	47		1	3330		63
R2SB-9B	286580	3-10"	8/23/2001	12		1	287		6.3
R2SB-10A	286613	0-3"	8/23/2001	8.9	J	1	25	J	0.6
R2SB-10B	286614	3-10"	8/23/2001	12		1	10		0.6
R2SB-11A	286604	0-3"	8/23/2001	14	J	1	360	J	6.3
R2SB-11B	286605	3-10"	8/23/2001	6.2	J	1	83	J	1.3
R2SB-12A	286607	0-3"	8/23/2001	11	J	1	222	J	3.2
R2SB-12B	286608	3-10"	8/23/2001	8.6	J	1	71	J	1.3

Notes:

Q - Qualifier
 RL - Reporting Limit
 J - Estimated, NA - Not Analyzed

FD - Field Duplicate
 Results reported in mg/kg

TABLE 5-2
RMC - BEECHGROVE PHASE II CLOSURE INVESTIGATION
Soil Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Arsenic			Lead		
				Result	Q	RL	Result	Q	RL
R2SB-13A	286581	0-3"	8/23/2001	53	J	1	7390	J	125
R2SB-13A-A	295465	0-3"	12/13/2001	14	J	1	2910	J	32
R2SB-13A-B	295466	6-9"	12/13/2001	2.1	J	1	24	J	0.6
R2SB-13A-C	295467	12-15"	12/13/2001	4.5	J	1	11	J	0.6
R2SB-13B	286582	3-10"	8/23/2001	27	J	1	875	J	13
R2SB-14A	286611	0-3"	8/23/2001	8.6	J	1	89	J	1.3
R2SB-14B	286612	3-10"	8/23/2001	3.6	J	1	7.3	J	0.6
R2SB-15A	286602	0-3"	8/23/2001	4.8	J	1	265	J	3.2
R2SB-15B	286603	3-10"	8/23/2001	14	J	1	184	J	3.2
R2SB-16A	286600	0-3"	8/23/2001	7.7	J	1	179	J	3.2
R2SB-16B	286601	3-10"	8/23/2001	9	J	1	125	J	3.2
R2SB-17A	286583	0-3"	8/23/2001	25	J	1	4160	J	63
R2SB-17B	286584	3-10"	8/23/2001	11	J	1	267	J	3.2
R2SB-18A	286598	0-3"	8/23/2001	10	J	1	669	J	13
R2SB-18B	286599	3-10"	8/23/2001	6.3	J	1	122	J	3.2
R2SB-19A	286596	0-3"	8/23/2001	16	J	1	796	J	13
R2SB-19B	286597	3-10"	8/23/2001	14	J	1	250	J	3.2
R2SB-20A	286593	0-3"	8/23/2001	9.6	J	1	486	J	6.3
R2SB-20B	286594	3-10"	8/23/2001	4.4	J	1	129	J	3.2
R2SB-52-A	295468	0-3"	12/13/2001	4.6	J	1	300	J	3.2
R2SB-52-B	295469	6-9"	12/13/2001	3.3	J	1	5.7	J	0.6
R2SB-21A	286591	0-3"	8/23/2001	10	J	1	296	J	3.2
R2SB-21B	286592	3-10"	8/23/2001	7	J	1	84	J	1.3
R2SB-22A	286589	0-3"	8/23/2001	13	J	1	734	J	13
R2SB-22B	286590	3-10"	8/23/2001	12	J	1	188	J	3.2
R2SB-23A	286588	0-3"	8/23/2001	10	J	1	463	J	6.3
R2SB-23B	286688	3-10"	8/23/2001	13	J	1	105	J	1.3
R2SB-24A	286586	0-3"	8/23/2001	13	J	1	779	J	13
R2SB-24B	286587	3-10"	8/23/2001	9.1	J	1	117	J	3.2
R2SB-32A	286659	0-3"	8/27/2001	4.9	J	1	286	J	6.3
R2SB-32B	286660	3-10"	8/27/2001	4.2	J	1	91	J	1.3
R2SB-33A	286661	0-3"	8/27/2001	6.3	J	1	202	J	3.2
R2SB-33B	286662	3-10"	8/27/2001	5.7	J	1	67	J	1.3
R2SB-34A	286664	0-3"	8/27/2001	7.1	J	1	170	J	3.2
R2SB-34B	286665	3-10"	8/27/2001	4.1	J	1	28	J	0.6
R2SB-35A	286655	0-3"	8/27/2001	3.7	J	1	191	J	3.2
R2SB-35B	286656	3-10"	8/27/2001	4.7	J	1	79	J	1.3
R2SB-36A	286650	0-3"	8/27/2001	7.8	J	1	310	J	6.3
R2SB-36B	286651	3-10"	8/27/2001	6.1	J	1	109	J	3.2
R2SB-37A	286638	0-3"	8/27/2001	9.2	J	1	366	J	6.3
R2SB-37B	286639	3-10"	8/27/2001	8	J	1	509	J	6.3
R2SB-38A	286635	0-3"	8/27/2001	6.5	J	1	282	J	6.3
R2SB-38B	286636	3-10"	8/27/2001	5.2	J	1	175	J	3.2
R2SB-39A	286640	0-3"	8/27/2001	8.7	J	1	383	J	6.3
R2SB-39B	286641	3-10"	8/27/2001	7.9	J	1	144	J	3.2
R2SB-40A	286657	0-3"	8/27/2001	6.9	J	1	422	J	6.3
R2SB-40B	286658	3-10"	8/27/2001	4	J	1	50	J	0.6

Notes:

Q - Qualifier
 RL - Reporting Limit
 J - Estimated, NA - Not Analyzed

FD - Field Duplicate
 Results reported in mg/kg

TABLE 5-2
RMC - BEECHGROVE PHASE II CLOSURE INVESTIGATION
Soil Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Arsenic			Lead		
				Result	Q	RL	Result	Q	RL
R2SB-41A	286648	0-3"	8/27/2001	5.9	J	1	172	J	3.2
R2SB-41B	286649	3-10"	8/27/2001	5.9	J	1	128	J	3.2
R2SB-42A	286653	0-3"	8/27/2001	4.2	J	1	165	J	3.2
R2SB-42B	286654	3-10"	8/27/2001	3.9	J	1	77	J	1.3
R2SB-43A	286644	0-3"	8/27/2001	7.4	J	1	250	J	3.2
R2SB-43B	286645	3-10"	8/27/2001	7.4	J	1	201	J	3.2
R2SB-44A	286642	0-3"	8/27/2001	7.8	J	1	252	J	3.2
R2SB-44B	286643	3-10"	8/27/2001	8.5	J	1	108	J	3.2
R2SB-45A	286646	0-3"	8/27/2001	7.3	J	1	140	J	3.2
R2SB-45B	286647	3-10"	8/27/2001	6.2	J	1	85	J	1.3
R2SB-46-A	288689	0-3"	9/24/2001	6.9	J	1	34	J	0.6
R2SB-46-B	288690	3-10"	9/24/2001	6.5	J	1	41	J	0.6
R2SB-47-A	288692	0-3"	9/24/2001	6.7	J	1	45	J	0.6
R2SB-47-B	288693	3-10"	9/24/2001	9	J	1	24	J	0.6
R2SB-48-A	288694	0-3"	9/24/2001	6.5	J	1	41	J	0.6
R2SB-48-B	288695	3-10"	9/24/2001	6.7	J	1	45	J	0.6
R2SB-49-A	288696	0-3"	9/24/2001	8	J	1	47	J	0.6
R2SB-49-B	288697	3-10"	9/24/2001	9.7	J	1	117	J	3.2
R2SB-50-A	288698	0-3"	9/24/2001	6.9	J	1	34	J	0.6
R2SB-50-B	288699	3-10"	9/24/2001	7	J	1	36	J	0.6
R2SB-51-A	295111	0-3"	12/12/2001	6.6	J	1	285	J	6.3
R2SB-51-B	295112	6-9"	12/12/2001	7	J	1	199	J	6.3

Notes:

Q - Qualifier

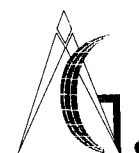
FD - Field Duplicate

RL - Reporting Limit

Results reported in mg/kg

J - Estimated, NA - Not Analyzed

TABLE 5-3
RMC - BEECH GROVE PHASE II CLOSURE INVESTIGATION
Sediment Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Lead			Arsenic		
				Results	Q	RL	Results	Q	RL
R2SED-1A	286553	0-6"	8/21/2001	1210	U	25	10		1
R2SED-1B	286554	6-12"	8/21/2001	1550		25	14		1
R2SED-1C	295099	12-18"	12/12/2001	19	J	0.6	10		1
R2SED-1D	295100	18-24"	12/12/2001	62	J	0.6	5.5		1
R2SED-2A	286555	0-6"	8/21/2001	1230	U	25	10		1
R2SED-2B	286556	6-12"	8/21/2001	955	U	25	11		1
R2SED-3A	286557	0-6"	8/21/2001	1570		25	12		1
R2SED-3B	286558	6-12"	8/21/2001	6020	U	125	9.3		1
R2SED-3C	295101	12-18"	12/12/2001	622	J	13	13		1
R2SED-3D	295102	18-24"	12/12/2001	691	J	13	12		1
R2SED-4A	286559	0-6"	8/21/2001	2480	U	63	20		1
R2SED-4B	286560	6-12"	8/21/2001	1570		25	17		1
R2SED-5A	286561	0-6"	8/21/2001	5410		125	46		1
R2SED-5B	286562	6-12"	8/21/2001	1240		25	20		1
R2SED-5C	295103	12-18"	12/12/2001	73	J	1.3	5.7		1
R2SED-5D	295104	18-24"	12/12/2001	20	J	0.6	7.3		1
R2SED-6A	286564	0-6"	8/21/2001	8430		125	44		1
R2SED-6B	286565	6-12"	8/21/2001	3840		63	35		1
R2SED-7A	286566	0-6"	8/21/2001	5480		125	39		1
R2SED-7B	286567	6-12"	8/21/2001	2340		63	26		1
R2SED-7C	295106	12-18"	12/12/2001	61	J	0.6	13		1
R2SED-7D	295107	18-24"	12/12/2001	27	J	0.6	9.2		1
R2SED-8A	286568	0-6"	8/21/2001	8190		125	36		1
R2SED-8B	286569	6-12"	8/21/2001	2610		63	23		1
R2SED-9A	286570	0-6"	8/21/2001	3630		63	29		1
R2SED-9B	286571	6-12"	8/21/2001	471		6.3	11		1
R2SED-9C	295109	12-18"	12/12/2001	25	J	0.6	8.9		1
R2SED-9D	295110	18-24"	12/12/2001	39	J	0.6	8.2		1
R2SED-10A	286572	0-6"	8/21/2001	84		1.3	9.4		1
R2SED-10B	286573	6-12"	8/21/2001	25		0.6	7.2		1

Notes:

Q - Qualifier

RL - Reporting Limit

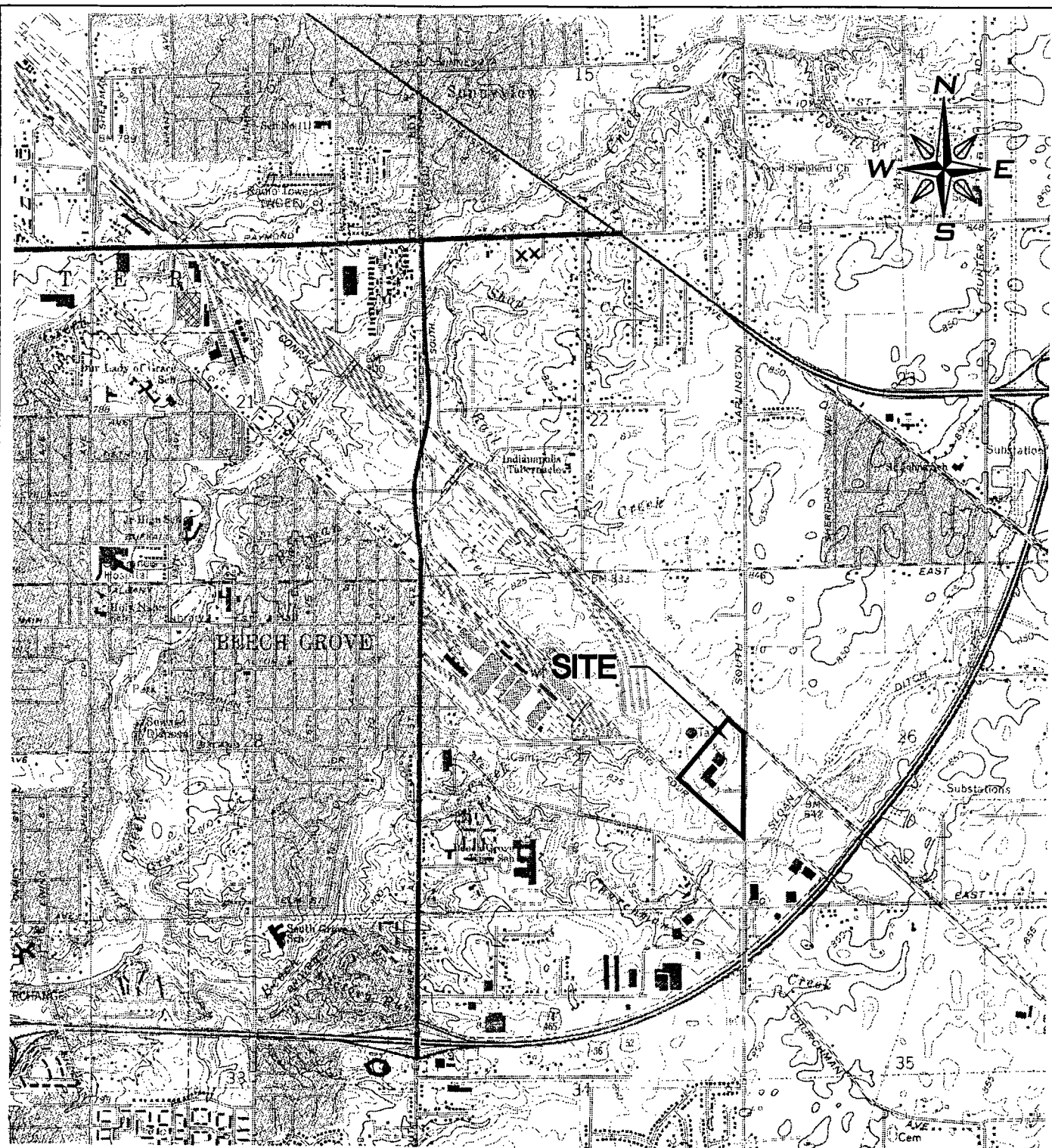
J - Estimated

FD - Field Duplicate

Results reported in mg/kg




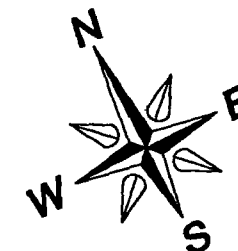
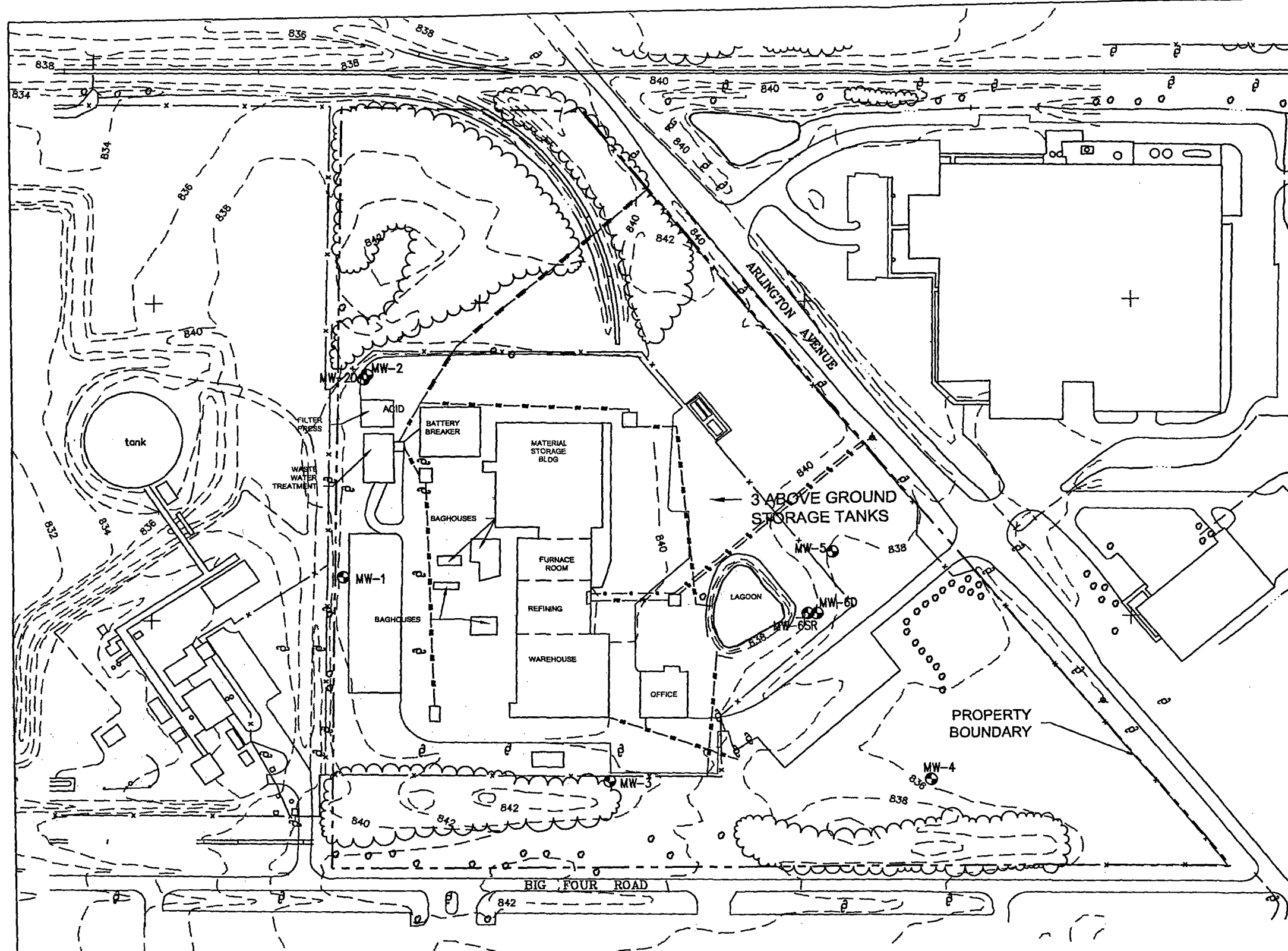
FIGURES



REF. U.S.G.S. 7 1/2 MINUTE
BEECH GROVE, IND
QUADRANGLE MAP

**REFINED METALS CORPORATION
PHASE II RCRA FACILITY INVESTIGATION
BEECH GROVE, INDIANA**

Date: 10/12/98	SITE LOCATION MAP	
Scale: N.T.S.		
Drawn By: P.S.G.	 Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317	
Checked By: J.S.W.		
Project Mgr: P.G.S.		
Dwg No. 98478-01		
Issue: REV 1 8 2002	Project No. 98-478-05	FIGURE: 2-1



LEGEND

⊙ MONITORING WELL LOCATION

REFINED METALS CORPORATION
PHASE II INVESTIGATION REPORT
BEECH GROVE, IN

Scale:
1"=180'
Originated By:
B.L.
Drawn By:
V.E.N.
Checked By:
Project Mgr:
P.G.S.
Dwg No.
98478-02
Issued
NOV 18 2002

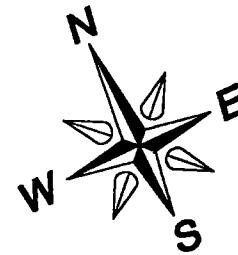
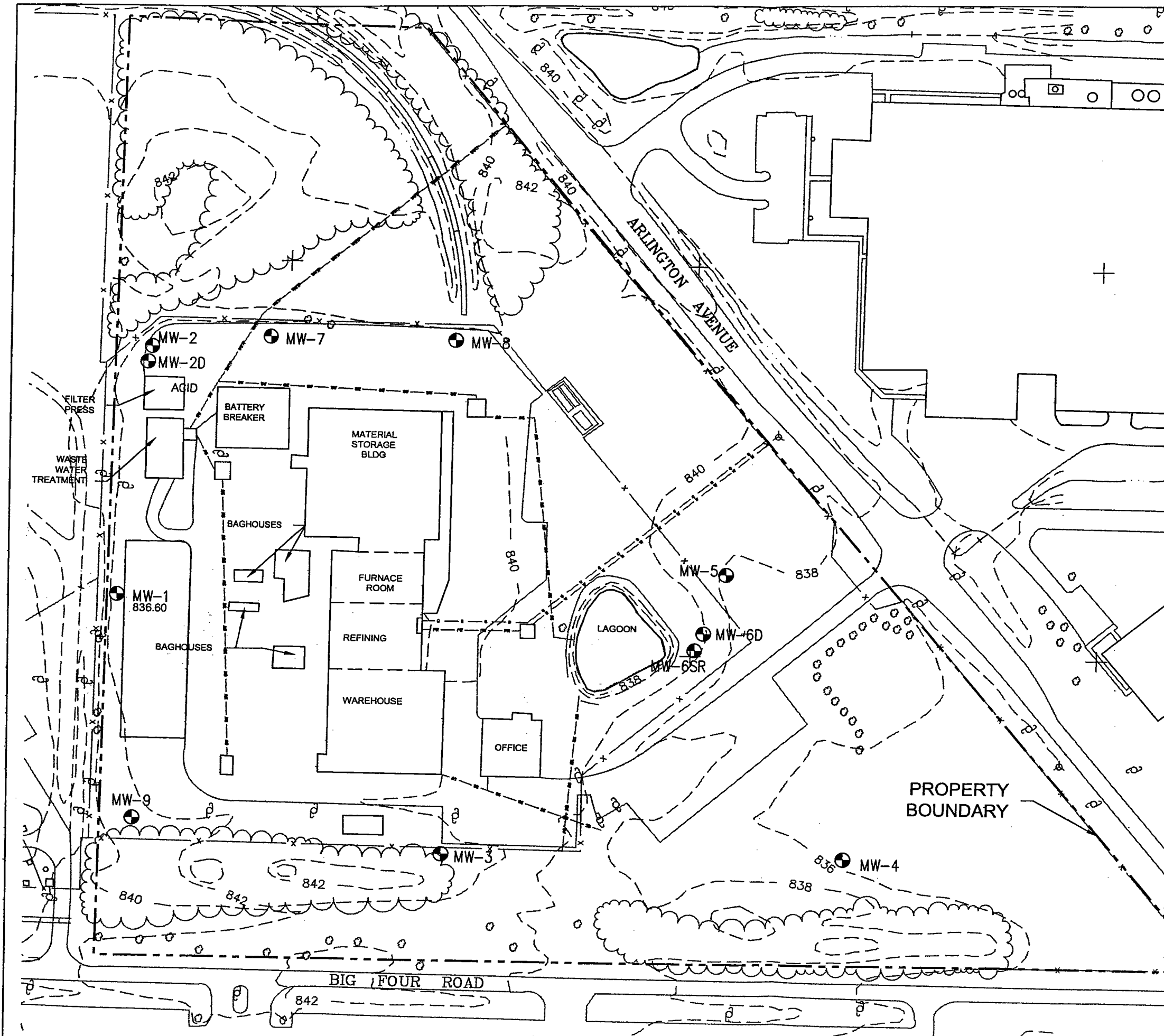
SITE PLAN



Advanced GeoServices Corp.
Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Project No.
98-478-05

FIGURE: 2-2



LEGEND

● MONITORING WELL LOCATION

**REFINED METALS CORPORATION
PHASE II RCRA FACILITY INVESTIGATION
BEECH GROVE, INDIANA**

Scale:
1"=130'

Originated By:
P.G.S.

Drawn By:
P.S.G.

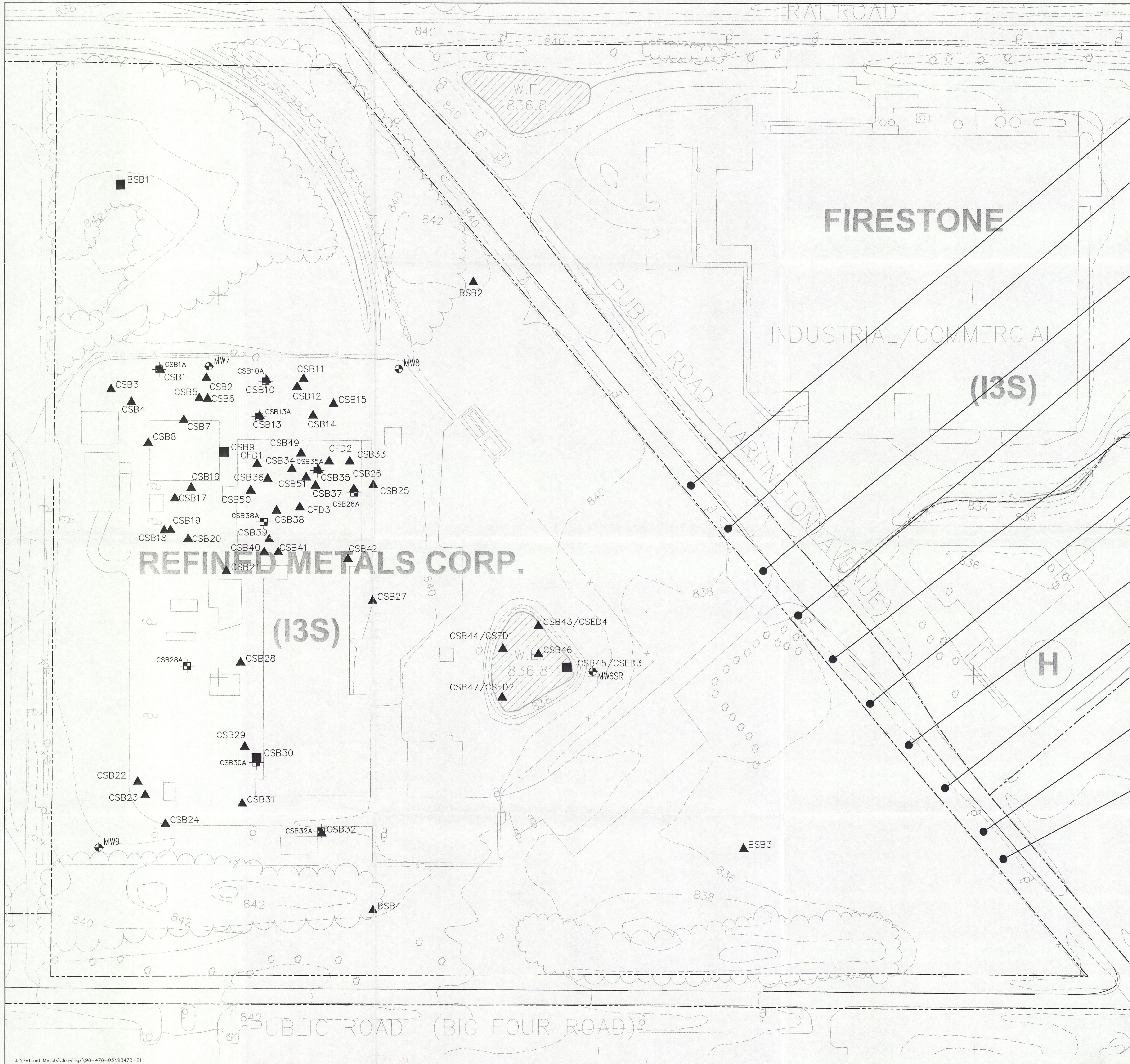
Checked By:
J.S.W.

Project Mgr:
P.G.S.

Dwg No.
98478-22

Issued:
NOV 1 8 2002

SITE MONITORING WELL LOCATIONS	
	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
	Project No. 98-478-05
	FIGURE: 4-1



SAMPLE ID	Lead	Arsenic
R2SED-1A	1210 U	10
R2SED-1B	1550	14
R2SED-1C	19 J	10
R2SED-1D	62 J	5.5

SAMPLE ID	Lead	Arsenic
R2SED-2A	1230 U	10
R2SED-2B	955 U	11

SAMPLE ID	Lead	Arsenic
R2SED-3A	1570	12
R2SED-3B	6020 U	9.3
R2SED-3C	622 J	13
R2SED-3D	691 J	12

SAMPLE ID	Lead	Arsenic
R2SED-4A	2480 U	20
R2SED-4B	1570	17

SAMPLE ID	Lead	Arsenic
R2SED-5A	5410	46
R2SED-5B	1240	20
R2SED-5C	73 J	5.7
R2SED-5D	20 J	7.3

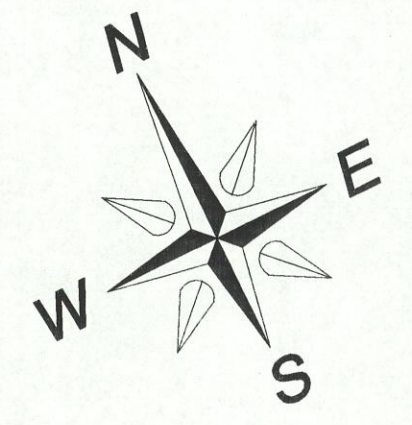
SAMPLE ID	Lead	Arsenic
R2SED-6A	8430	44
R2SED-6B	3840	35

SAMPLE ID	Lead	Arsenic
R2SED-7A	5480	39
R2SED-7B	2340	26
R2SED-7C	61 J	13
R2SED-7D	27 J	9.2

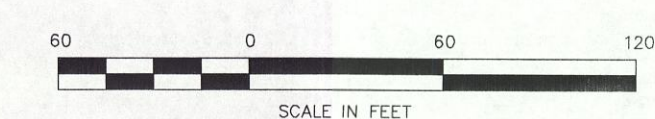
SAMPLE ID	Lead	Arsenic
R2SED-8A	8190	36
R2SED-8B	2610	23

SAMPLE ID	Lead	Arsenic
R2SED-9A	3630	29
R2SED-9B	471	11
R2SED-9C	25 J	8.9
R2SED-9D	39 J	8.2

SAMPLE ID	Lead	Arsenic
R2SED-10A	84	9.4
R2SED-10B	25	7.2




- LEGEND**
- ▲ SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN, OCTOBER 1999
 - APPROXIMATE SAMPLE LOCATION—NOT SURVEYED
 - ⊕ MONITORING WELL LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
 - ⊕ SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN, DECEMBER 2001
 - SED SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN



**REFINED METALS CORPORATION
PHASE II RCRA FACILITY INVESTIGATION**
BEECH GROVE, IN

Date: 4/23/02
Scale: 1"=60'
Drawn By: P.S.G.
Checked By: J.S.W.
Project Mgr: J.S.W.
Project No: 98-478-05
Dwg No: 98478-21
Issued: NOV 18 2002

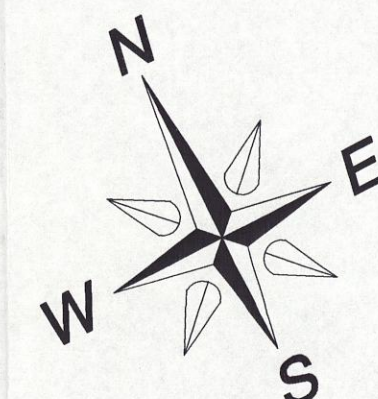
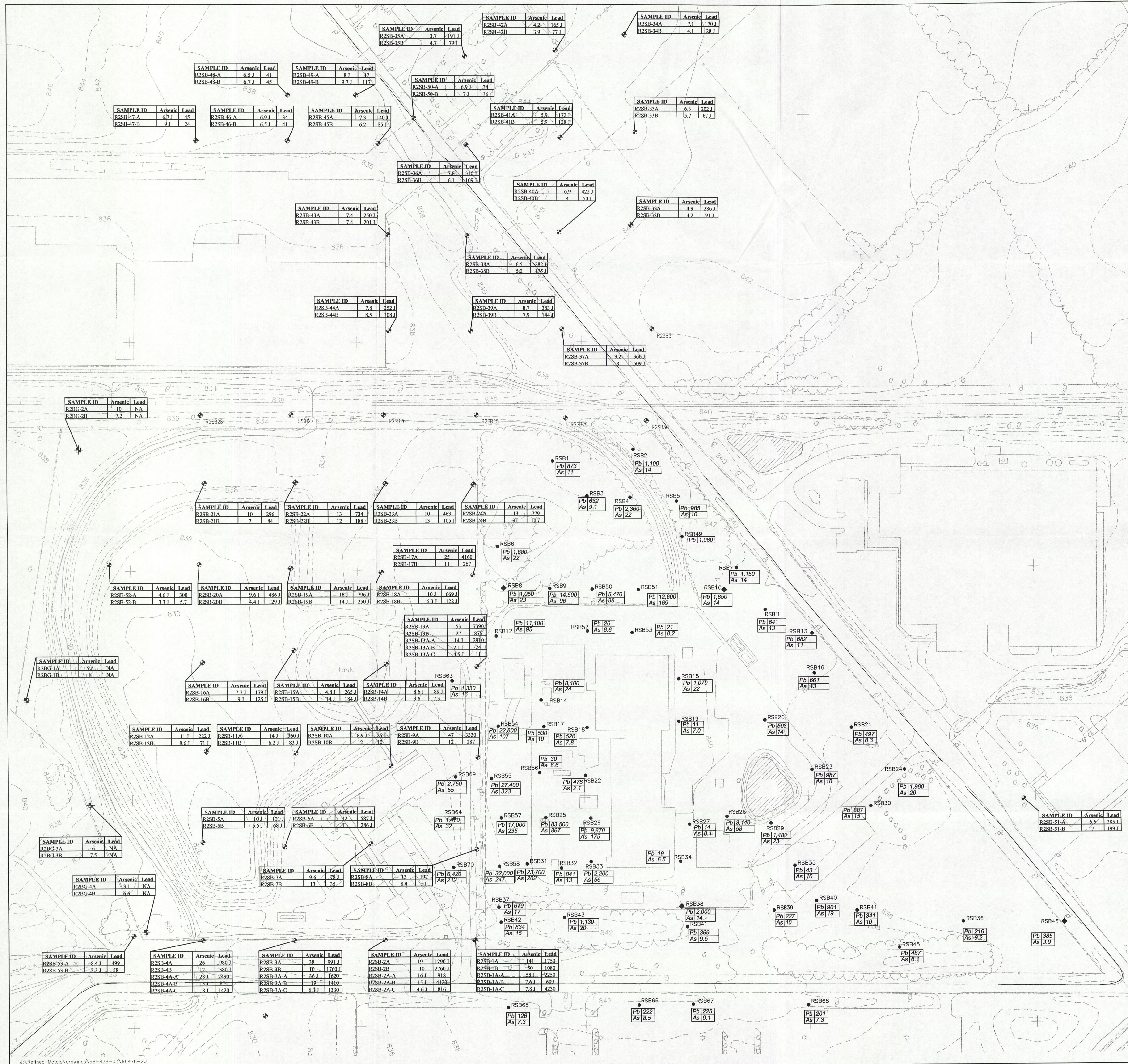


Advanced GeoServices Corp.
Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

SEDIMENT SAMPLE LOCATIONS

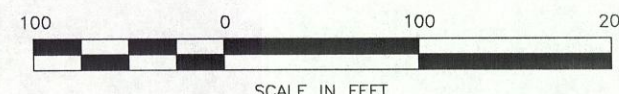
DRAWING:

4-2



LEGEND

- RSB11 SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
- APPROXIMATE SAMPLE LOCATION-NOT SURVEYED
- Pb-887 ANALYTICAL RESULT-LEAD (MG/KG)
- As-23 ANALYTICAL RESULT-ARSENIC (MG/KG)



REFINED METALS CORPORATION
PHASE II RCRA FACILITY INVESTIGATION
BEECH GROVE, IN

Date: 4/23/02
Scale: 1"=100'
Drawn By: P.S.G.
Checked By: J.S.W.
Project Mgr.: J.S.W.
Project No.: 98-478-05
Dwg No.: 98478-20
Issued: NOV 18 2002

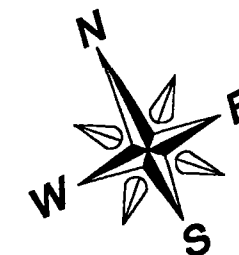
SOIL SAMPLE LOCATIONS



Advanced GeoServices Corp.
Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

DRAWING:

4-3



LEGEND

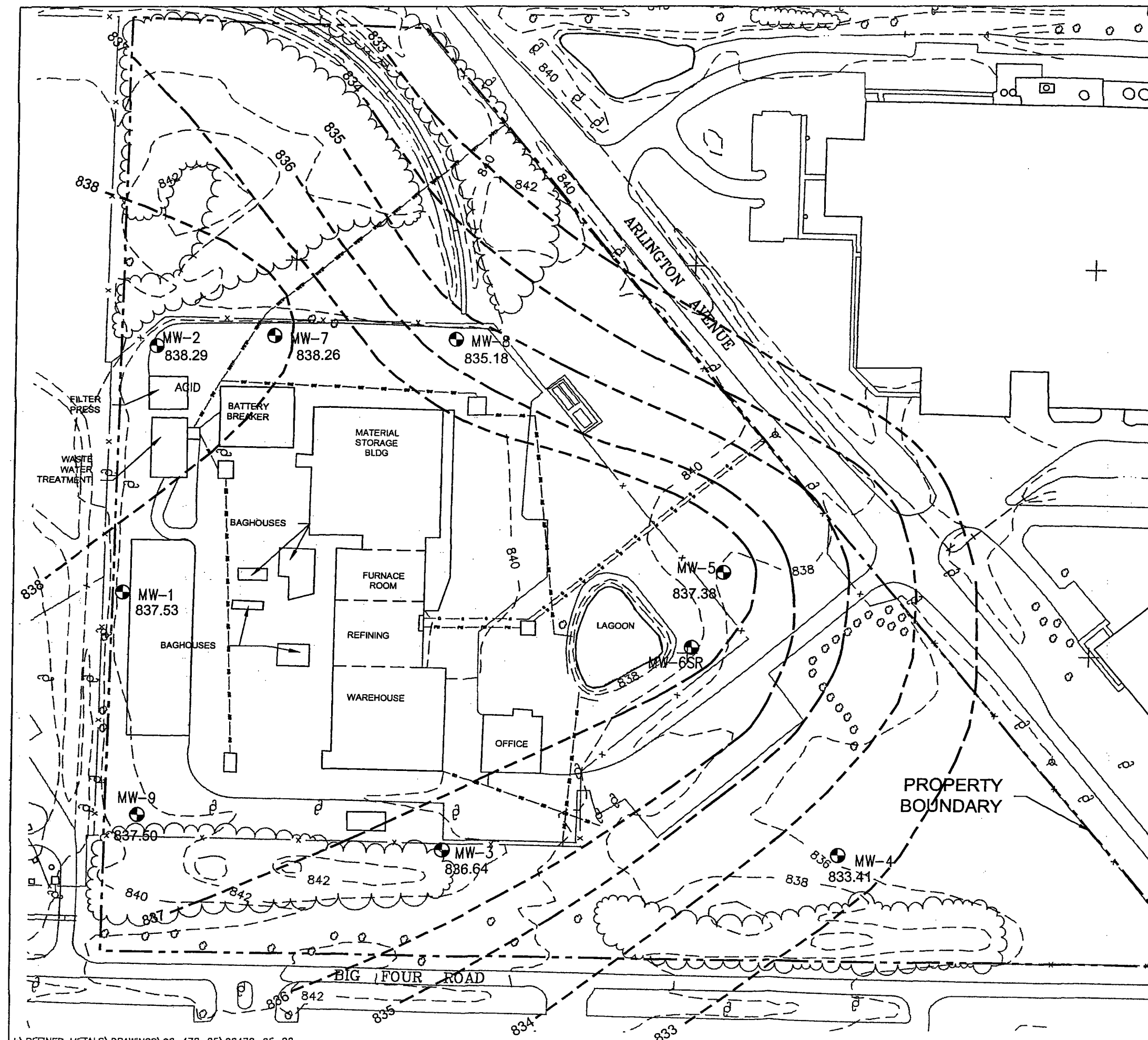


SHALLOW MONITORING WELL

--833--

POTENTIOMETRIC SURFACE

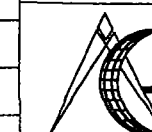
NOTE: THE WATER TABLE ELEVATION MEASUREMENT FOR MW-6SR WAS CONSIDERED ANOMALOUS AND WAS EXCLUDED.



REFINED METALS CORPORATION SUPPLEMENTAL CLOSURE INVESTIGATION BEECH GROVE, INDIANA

POTENTIOMETRIC MAP
SEPTEMBER 2001 DATA

Scale:
1"=130'
Originated By:
J.S.W.
Drawn By:
S.M.F.
Checked By:
J.S.W.
Project Mgr:
P.G.S.
Dwg No.
98478-05-02
Issued:
NOV 1 8 2002

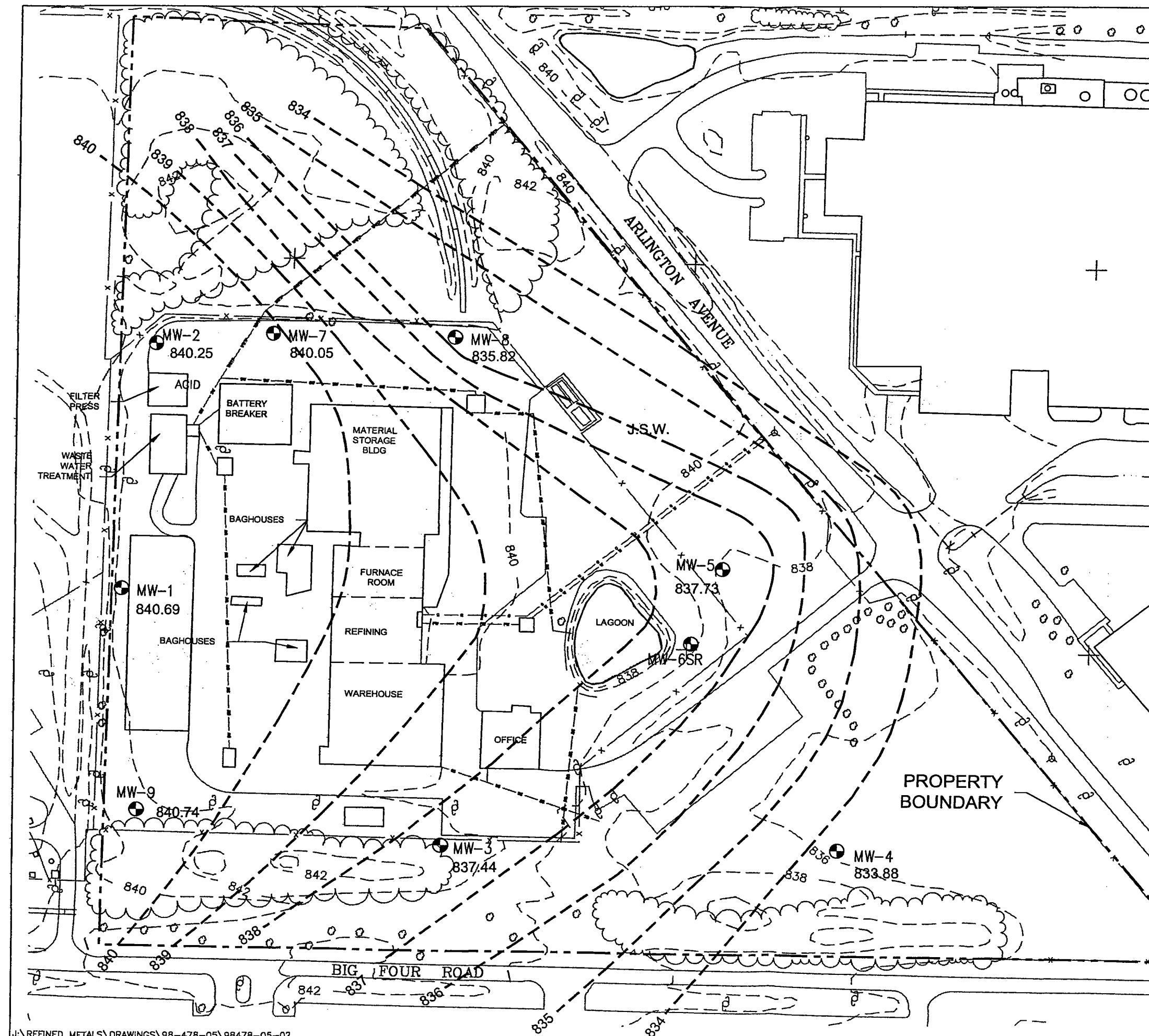


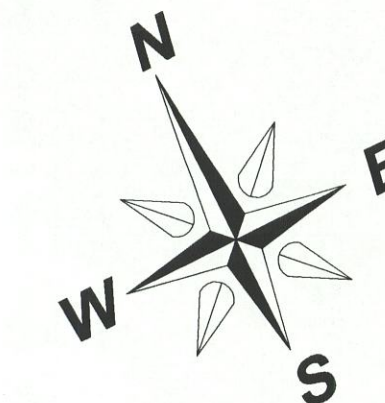
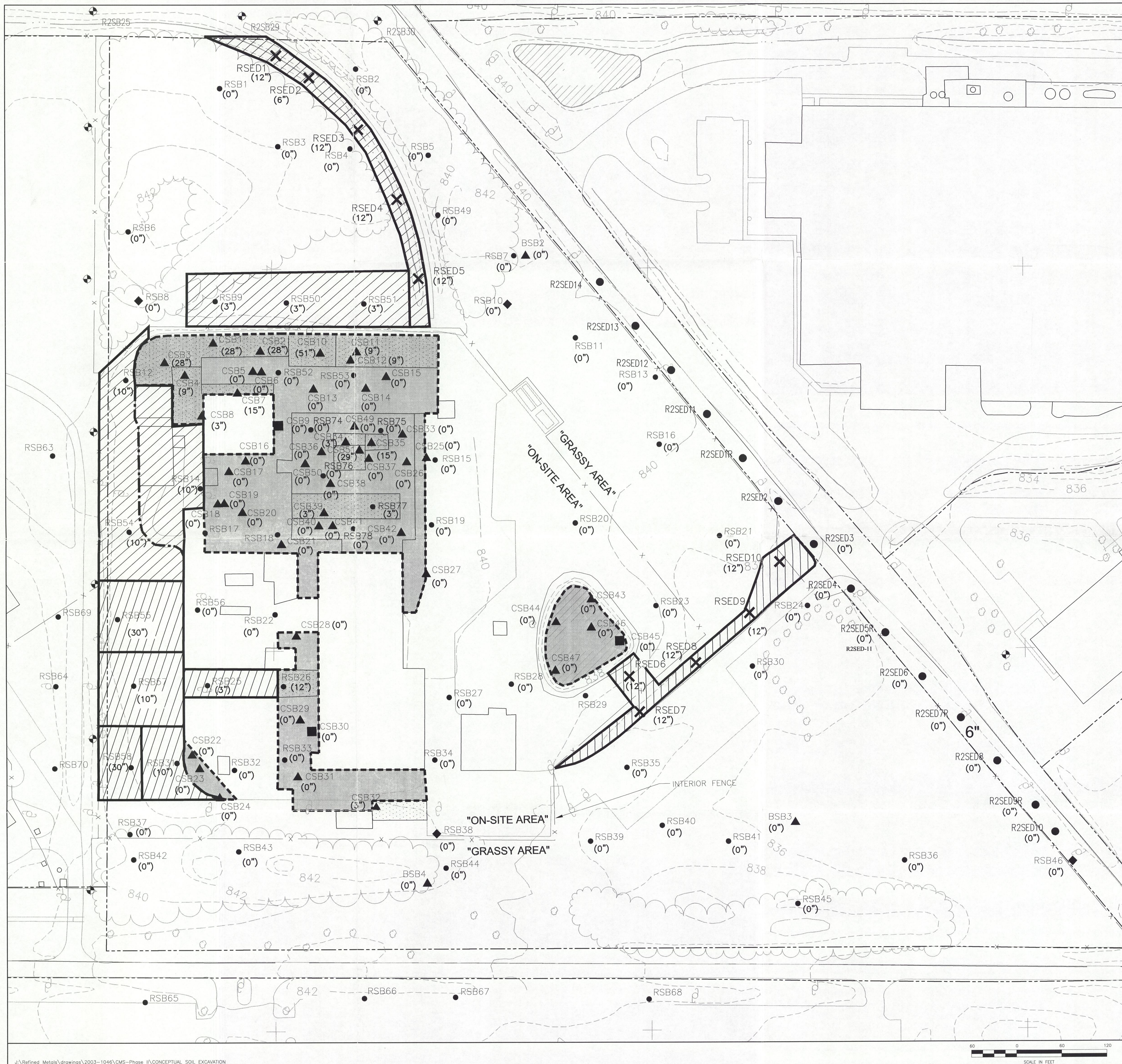
Advanced GeoServices Corp.

Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Project No.
98-478-05

FIGURE: 5-1





LEGEND

- CSB30 APPROXIMATE SOIL SAMPLE LOCATION
- CSB26 SOIL SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, INDIANA
- RSB77 SOIL SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, INDIANA
- R2SED1R SEDIMENT SAMPLE LOCATION ARLINGTON AVE. DRAINAGE DITCH
- RSB8 SEDIMENT SAMPLE LOCATION ARLINGTON AVE. DRAINAGE DITCH
- RSED3 SEDIMENT SAMPLE LOCATION IN GRASSY AREA SWALES
- (0") DEPTH OF EXCAVATION REQUIRED TO REMOVE SOIL OR SEDIMENT WITH TOTAL LEAD CONCENTRATION ABOVE RAL ESTABLISHED IN BHHRA
- APPROXIMATE PROPERTY BOUNDARY
- (#) NON-SWMU EXCAVATION AREA WITH EXCAVATION DEPTH IN INCHES
- SOLID WASTE MANAGEMENT UNIT AS DELINEATED ON EXHIBIT B OF CONSENT DECREE
- (#) SOIL WASTE MANAGEMENT UNIT EXCAVATION AREA. PROJECTED REMOVAL DEPTH AS SHOWN.

NOTES:

- This drawing is based on the proposed remedy as evaluated under Corrective Measure Study - Phase II
- Excavation area depths were selected using cleanup standards of 8,470 ppm for lead in "On-Site Site" soils (within the interior fence) and 4,954 ppm of lead in "Grassy Area" soils. These cleanup standards were based on risk assessment results from Corrective Measure Study - Phase I.

ON-SITE (NON-SWMU) EXCAVATION TABLE				
SAMPLE(S)	SURFACE AREA (sf)	REMOVAL DEPTH (in)	SOIL REMOVAL VOLUME (cf)	COVER TYPE
RSB-58	5,684	30	14,210	Bare/Weeds
RSB-31	6,076	10	5,063	Bare/Weeds
RSB-57	11,155	10	9,296	Bare/Weeds
RSB-55	10,810	30	27,025	Bare/Weeds
RSB-54 and 12	23,135	10	19,279	Bare/Weeds
RSED-6	2,205	12	2,025	Grass
RSB-25	4,750	3	1,188	Bituminous Pavement
Battery Breaker	7,176	15	8,970	Concrete
55,065 sf Bare/Grass			76,898 cf Bare	
11,926 sf Building/Pavement			10,158 cf Pmt	

SWMU EXCAVATION TABLE				
SAMPLE(S)	SURFACE AREA (sf)	REMOVAL DEPTH (in)	SOIL REMOVAL VOLUME (cf)	COVER TYPE
CSB-1, 2 and 3	8,525	28	19,892	Concrete 6"
CSB-4 and 8	3,000	9	2,250	Concrete 6"
CSB-7	940	15	1,175	Concrete 6"
CSB-10	2,790	51	11,858	Concrete 8"
CSB-11	5,805	9	4,554	Concrete 8"
CSB-32	2,150	3	531	Grass
CSB-34	688	3	172	Concrete 12"
CSB-35	600	15	750	Building 12"
CSB-39, RSB-77	5,075	3	1,269	Building 12"
CSB-51	1,200	39	3,900	Building 12"
RSB-26	1,672	12	1,672	Bituminous Pavement
Total SWMUs = 1,771 cy (Does not include sediment from inside Surface Impoundment)				

GRASSY AREA EXCAVATION TABLE				
SAMPLE(S)	SURFACE AREA (sf)	REMOVAL DEPTH (in)	SOIL REMOVAL VOLUME (cf)	COVER TYPE
RSB-9, 50, 51	20,790	3	5,198	Brush
RSED 1, 2, 3, 4, 5	11,750	12	11,750	Brush
RSED 7, 8, 9, 10	11,600	12	11,600	Grass
44,140 sf			28,548 cf	

NOT FOR CONSTRUCTION

REFINED METALS CORPORATION
CORRECTIVE MEASURES STUDY
PHASE 2 REPORT

BEECH GROVE, IN

Date: 10-21-2005	PROPOSED EXCAVATION AREAS	DRAWING: 1
Scale: 1"=60'		
Drawn By: P.S.G.		
Checked By: P.G.S.		
Project Mgr: P.G.S.		
Project No.: 2003-1046-04	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317	
Dwg No.		
Issued: OCT 21 2005		

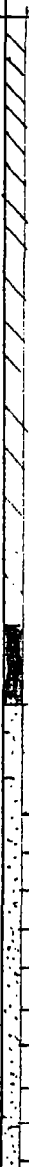


APPENDIX A

Boring Logs

BORING LOG

PAGE 1 OF 1

PROJECT NUMBER: 98-478-05		PROJECT NAME: RMC - Beech Grove					
BORING / WELL NUMBER: MW-6SR		LOCATION: Beech Grove, Indiana					
DIAMETER: 4"		WATER DEPTH: 12.5'			DATE/TIME: 8/21/01		
GEOLOGIST: Brendan O'Donnell		COMPLETION DEPTH: 30.0'			DATE STARTED: 8/21/01		
DRILLING METHOD: HSA		SAMPLING METHOD: HSA/SS			DATE COMPLETED: 8/23/01		
DRILLING SUBCONTRACTOR: Boart Longyear		DEVELOPMENT METHOD: Surged Block			YIELD: —		
DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0-5.0 Clay, brown-orange, dry with topsoil and sand, STIFF			8,8 10,16 7,10 11,16	data not collected	NA		<u>Well Construction</u>
5.0-10.0 Clay, brown-gray, moist STIFF		5	5,7 11,15 5,10 11,13 10,10 14,12				Riser: SCH. 40 PVC 0'-20'
10.0-15.0 sandy Silt, brown-gray, STIFF, moist to saturated, (ML)		10	— — 9,9 11,13 12,12				Screen: 0.010 S 10T SCH. 40 PVC 20'-30'
15.0-20.0 sandy Silt, gray, STIFF Saturated, (ML)		15	15,15 — 13,14				Sand pack: #1 Sand 18'-30'
20.0-25.0 sandy Silt, gray med. STIFF Saturated, ML		20	15,18 8,8 7,8 5,1 9,10 10,10				Bentonite: 16'-18' seal
25.0-30.5 sandy Silt, gray, Very STIFF Saturated, ML		25	10,10 10,10 16,16 21,27 100,5				Grout: 95% Type II Portland 5% Bentonite 0'-16'
Boring terminated at 30.5'		30					Shell by Tube Collected at: 10'-12' 16'-18' For Sieve & Hydro Testing

BORING LOG

PAGE 1 OF 1

PROJECT NUMBER: 98-478-0		PROJECT NAME: RMC - Beech Grove				
BORING / WELL NUMBER: MW-7		LOCATION: Beech Grove, Indiana				
DIAMETER: 4"		WATER DEPTH: 12.5'			DATE/TIME: 8/22/01	
GEOLOGIST: Brendan O'Donnell		COMPLETION DEPTH: 25'			DATE STARTED: 8/24/01	
DRILLING METHOD: HSA		SAMPLING METHOD: HSA/SS			DATE COMPLETED: 8/23/01	
DRILLING SUBCONTRACTOR: Boart Longyear		DEVELOPMENT METHOD: Surge Block			YIELD: —	

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0' - 5.0' Clay, gray to greenish gray moist to dry			—		NA.		Well Construction
			9.9				
			10.12				
		5	11.10				
			10.11				
5.0' - 10.0' Clay, brown, dry to moist			7.11				
			14.13				
			8.11				
		10	12.11				
10.0' - 15.0' sandy silt, trace gravel brown to dark brown, stiff moist to saturated, ML			5.6				
			6.12				
			7.14				
			22.47				
		15	14.14				
15.0' - 20.0' sandy silt, light brown and gray, saturated, very stiff, ML			28.39				
		5.13					
		23.37					
		14.15					
	20	18.32					
20.0' - 25.0' sandy silt, light gray saturated, very stiff ML		15.10					
		4.28					
		18.21					
		21.24					
	25	15.16					
25.0' - 28.0' sandy silt, light gray saturated, very stiff - Hard (ML)		14.25					
		4.14					
		38.68					
	30						
Boring terminated at 28'							

BORING LOG

PAGE 1 OF 1

PROJECT NUMBER: 98-478-05	PROJECT NAME: RAC - Beech Grove					
BORING / WELL NUMBER: MW-8	LOCATION: Beech Grove, Indiana					
DIAMETER: 4"	WATER DEPTH: 10.5'			DATE/TIME: 8/23/01		
GEOLOGIST: Brendan O'Donnell	COMPLETION DEPTH: 30.0'			DATE STARTED: 8/21/01		
DRILLING METHOD: HSA	SAMPLING METHOD: HSA/SS			DATE COMPLETED: 8/21/01		
DRILLING SUBCONTRACTOR: Boart Longyear	DEVELOPMENT METHOD: Surged Block			YIELD: —		

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0' - 5.0' Clay with construction debris (Fill) brown to dark brown, moist, FL			1		NA		<u>Well construction</u> Riser: SCH 40 PVC 0'-20' Screen: 0.0105104 SCH 40 PVC 20'-20' Sand: #1 Sand PVC 0'-18' Dentonite: 16'-18' SPCL Grout: 0'-16' 95% 590 Type II Portland Cement / Bentonite
5.0' - 10.0' Same as above, FL			14.6				
		5	11.1				
			5.6				
			19.6				
		10	3.3				
			3.4				
			3.4				
10.0' - 15.0' sandy Silt, gray, medium Stiff, moist, ML			5.4				
			5.7				
			7.1				
			12.1				
		15	5.6				
			8.9				
			6.8				
			9.1				
			6.7				
		20	9.1				
			6.7				
			7.8				
			7.1				
			10.1				
		25	13.1				
			16.1				
		6.7					
		13.2					
		9.2					
	30	33.2					
~5.0' - 30.0' sandy Silt, gray, stiff saturated, ML							
Boring terminated at 30'							

BORING LOG

PAGE 1 OF 1

PROJECT NUMBER: 98-478-05	PROJECT NAME: RMC Beech Grove	
BORING / WELL NUMBER: MWR9	LOCATION: Beech Grove, Indiana	
DIAMETER: 4"	WATER DEPTH: 15.3'	DATE/TIME: 8/23/01
GEOLOGIST: Brendan O'Donnell	COMPLETION DEPTH: 25'	DATE STARTED: 8/22/01
DRILLING METHOD: HSA	SAMPLING METHOD: HSA/SS	DATE COMPLETED: 8/23/01
DRILLING SUBCONTRACTOR: Boert Longyear	DEVELOPMENT METHOD: Surge & Back	YIELD: —

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0' - 5.0' Sand with construction debris, dry, FL			15/12		NA		<p>Well Construction</p> <p>Riser: Sch. 40 PVC 0'-15'</p> <p>Screen: 0.0105/64 Sch. 40 PVC 15'-25'</p> <p>Sand: #1 Sand Pack 13'-15'</p> <p>Bentonite: Seal 11'-13'</p> <p>Grout: 0'-11'</p> <p>Stop/By Tube Completed at 22'-24" and 24'-26" For Sieve and Hydro testing</p>
			10/10				
			7/7				
			7/7				
		5	8/8				
5.0' - 10.0' same as above, FL			19/10				
			4/5				
			5/11				
			5/7				
		10	6/8				
			5/5				
10.0' - 15.0' sandy silt, light gray, medium stiff, ML			5/8				
			7/8				
			9/11				
		15	6/6				
			7/7				
			3/4				
			9/11				
			11/13				
15.0' - 20.0' sand silt, light gray stiff, ML			13/27				
		20	4/47				
			5/63				
			22/29				
20.0' - 26.0' sandy silt, light gray Hard, saturated (ML)			33/41				
		25	12/12				
Boring terminated at 26'							



APPENDIX B
Data Validation Report of Soil Samples Collected on August 21-27,
2001

DATA VALIDATION REPORT
OF
SOIL SAMPLES
COLLECTED AUGUST 21-27, 2001
FOR
INORGANIC ANALYSES
Sample Delivery Group No. 35132-30

PREPARED FOR:

Refined Metals Corporation
Beech Grove, Indiana

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

November 7, 2001
UPDATED November 11, 2002
Project Number 98-478-04

Blank ID	Parameter	Concentration (µg/L)	Associated Samples
EB-1-JLV	Lead	11	R2SED-1-A/B, R2SED-2-A/B, R2SED-3-A/B, R2SED-4-A/B
EB-2-JLV	Lead	5.8	R2SED-5-A/B/C, R2SED-6-A/B, R2SED-7-A/B, R2SED-8-A/B, R2SED-9-A/B, R2SED-10-A/B/C
EB-3-JLV	Lead	2.8	R2SB-1-A, R2SB-8-A/B, R2SB-9-A/B, R2SB-13-A/B, R2SB-17-A/B/C
EB-4-JLV	Lead	2.3	R2SB-24-A/B, R2SB-23-A/B, R2SB-22-A/B, R2SB-21-A/B, R2SB-20-A/B/C
EB-5-JLV	Lead	1.7	R2SB-19-A/B, R2SB-18-A/B, R2SB-16-A/B, R2SB-15-A/B, R2SB-11-A/B/C
EB-6-JLV	Lead	1.6	R2SB-12-A/B, R2SB-5-A/B, R2SB-14-A/B, R2SB-10-A/B, R2SB-7-A/B/C, R2SB-6-A/B, R2SB-3-A/B, R2SB-4-A/B, R2SB-2-A/B
EB-7-JLV	Lead	8.6	Samples associated were only analyzed for arsenic
EB-10-JLV	Lead	2.9	R2SB-42-A/B, R2SB-35-A/B, R2SB-40-A/B, R2SB-32-A/B, R2SB-33-A/B/C, R2SB-34-A/B

Samples with concentrations less than five times the blank concentration were qualified as non-detected (U) due to blank contamination.

6. ICP Interference Check Sample

The interference check sample (LCS) is analyzed by ICP-MS to verify interelement and background correction factors. Analysis was performed as required at the beginning and end of each sample analysis run and recoveries were within the specified criteria of 80-120 percent.

7. Duplicate Analysis

The relative percent differences (RPDs) were within the control limit of 35 percent for solid samples.

8. Field Duplicates

Samples R2BG-4-B/C, R2SB-11-A/C, R2SB-17-A/C, R2SB-20-A/C, R2SB-33-A/C, R2SB-36-A/C, R2SB-38-A/C, and R2SB-7-A/C were field duplicates. Results exhibited reasonable agreement, with the exception of the following:

Parameter	Sample ID	Sample Conc	Field Duplicate ID	Field Duplicate Conc	Difference/RPD	Criteria
Arsenic	R2SB-11-A	14	R2SB-11-C	7.5	60.47%	40%
Lead	R2SB-7-A	78	R2SB-7-C	49	45.67%	40%

Sample and field duplicate results or reporting limits were qualified as estimated (J) for the parameter exceeding the criteria.

9. Matrix Spike Analysis

The matrix spike (MS) percent recoveries were within the QC limits of 75-125 percent (soil matrices).

10. Laboratory Control Sample (LCS)

The laboratory control sample (LCS) percent recoveries were within the QC limits of 80-120 percent.

11. ICP Serial Dilution

All concentrations were either less than 50 times the instrument detection limit (IDL) or greater than 50 times the IDL with the percent differences that were ± 10 percent of the serial dilution result, with the exception of the following:

Sample ID	Parameter	Original Conc	Diluted Conc	%D	IDL	IDL * 50
R2SB-34-A	Lead	196.07	170.04	13.27	0.029	1.45
R2SB-43-A	Lead	299.38	250.24	16.41	0.029	1.45
R2SB-2-B	Lead	2413.23	2821.16	16.90	0.029	1.45
R2SB-10-A	Arsenic	8.9	7.97	10.62	0.097	4.85
R2SB-10-A	Lead	25.49	22.84	10.41	0.029	1.45

Sample results and reporting limits for samples in the same Quality Control (QC) batch as those exceeding criteria were qualified as estimated (J/UJ).

DATA VALIDATION REPORT
VALIDATION SUMMARY

SUMMARY

All the data is useable as qualified.

DATA QUALIFIERS

The following qualifiers were used to modify the data quality and usefulness of individual analytical results.

- U - The analyte was not detected at the given quantitation limit.
- J - The analyte was positively identified and detected; however, the concentration is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
- UJ - The analyte was not detected; the associated quantitation limit is an estimated value.
- D - The value was obtained from a reanalysis of a diluted sample.
- E - Concentration reported is estimated, the concentration exceeded the instrument's calibration range. The sample should be diluted.
- R - The value reported has been rejected.

DATA ASSESSMENT

Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory and not directly involved in the project.

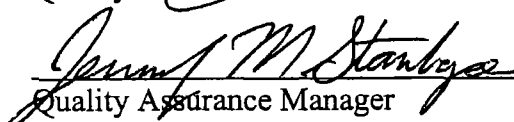
This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgement the data are acceptable for use except where qualified with qualifiers which modify the usefulness of those individual values.



Quality Assurance Scientist

11/11/2002

Date



Quality Assurance Manager

11/11/2002

Date

INORGANIC DATA VALIDATION SUMMARY

Site Name: RMC Beechgrove
 Project Number: 95-478-04
 Sampling Date(s): 8/21-27/2001

Laboratory: Trimatrix
 Case /Order No.: 35132-30

Compound List: ☐ TAL ☐ Priority Pollutant ☐ Appendix IX ☒ Other As, Pb
 Method: ☐ CLP SOW ILMO4 ☐ 40 CFR 136 ☒ SW-846 Method 6010
☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Initial Calibrations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Continuing Calibrations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CRDL Standards	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blank Analysis Results	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample conc < 5 x Blank conc
ICP Interference Check Sample Recoveries	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Duplicate Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Field Duplicate Results <i>see below for field duplicates</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	RPD > 40%
Spike Analysis Recoveries	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Serial Dilution Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample conc > 50x IDL and %D > 10%
Laboratory Control Sample Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Furnace AA QC Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NA
Quantitation/Detection Limits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Overall Assessment of Data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

General Comments: *Field Duplicate:* R2B6-4-B/R2B6-4-C ; R2SB-11-A/R2SB-11-C; R2SB-17-A/R2SB-17-C
R2SB-20-A/R2SB-20-C ; R2SB-33-A/R2SB-33-C; R2SB-36-A/R2SB-36-C
R2SB-38-A/R2SB-38-C ; R2SB-7-A/R2SB-7-C.

Accept - No qualification required.

FYI - For your information only, no qualification necessary.

Qualify - Qualify as rejected, estimated or biased

NA - Not applicable.

NR - Not reviewed.

QA Scientist

Date

[Signature]
11/8/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-20A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286593

7440-38-2	Arsenic, Total	9.6	J MS mg/kg dry
7439-92-1	Lead, Total	486	J MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	12:15
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000077



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-20B Data Qualifiers Units
C | Q | M

Lab Sample No: 286594

7440-38-2	Arsenic, Total	4.4	J	MS mg/kg dry
7439-92-1	Lead, Total	129	J	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	12:20
Date Received:	08/29/01
Time Received:	08:20

AWP
11/1/02

000078

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-20C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286595

7440-38-2 Arsenic, Total

6.4

J

MS mg/kg dry

7439-92-1 Lead, Total

447

J

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:25

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000079

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-19A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286596

7440-38-2	Arsenic, Total	16	J	MS	mg/kg dry
7439-92-1	Lead, Total	796	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	12:42
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000080



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-19B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286597

7440-38-2 Arsenic, Total

14

| J

| MS mg/kg dry

7439-92-1 Lead, Total

250

| J

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:45

Date Received:

08/29/01

Time Received:

08:20

And
11/8/02

000081



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-18A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286598

7440-38-2	Arsenic, Total	10	J	MS	mg/kg dry
7439-92-1	Lead, Total	669	J	MS	mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/23/01
Time Sampled: 12:52
Date Received: 08/29/01
Time Received: 08:20

Handwritten signature: Aug 11/18/02



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-18B

Data Qualifiers
C | Q | M

Units

Lab Sample No:

286599

7440-38-2 Arsenic, Total

6.3

| J

| MS mg/kg dry

7439-92-1 Lead, Total

122

| J

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:55

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000083



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-16A	Data Qualifiers	Units
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C	Q	M
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Lab Sample No: 286600

7440-38-2	Arsenic, Total	7.7	J	MS	mg/kg dry
7439-92-1	Lead, Total	179	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	14:45
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000034



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-16B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286601

7440-38-2 Arsenic, Total

9.0

| J

| MS mg/kg dry

7439-92-1 Lead, Total

125

| J

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

14:50

Date Received:

08/29/01

Time Received:

08:20

AWD
11/2/01

000085

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-15A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286602

7440-38-2	Arsenic, Total	4.8	J MS mg/kg dry
7439-92-1	Lead, Total	265	J MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:05
Date Received:	08/29/01
Time Received:	08:20

AWD
11/01/02

000086



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-15B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286603

7440-38-2 Arsenic, Total

14

| J

| MS mg/kg dry

7439-92-1 Lead, Total

184

| J

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

15:10

Date Received:

08/29/01

Time Received:

08:20

AWD
11/2/02

000087

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-11A	Data Qualifiers	Units
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Lab Sample No:	286604
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7440-38-2	Arsenic, Total	14	J	MS	mg/kg dry
7439-92-1	Lead, Total	360	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:30
Date Received:	08/29/01
Time Received:	08:20

AW
11/8/02

000088

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

Subm: August 2001 Samples

CAS No.	R2SB-11B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286605

7440-38-2	Arsenic, Total	6.2	J MS mg/kg dry
7439-92-1	Lead, Total	83	J MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:35
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000089



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-11C	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286606

7440-38-2	Arsenic, Total	7.5	J	MS	mg/kg dry
7439-92-1	Lead, Total	323	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:40
Date Received:	08/29/01
Time Received:	08:20

AWG
11/8/02

000090

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-12A Data Qualifiers Units
C | Q | M

Lab Sample No: 286607

7440-38-2	Arsenic, Total	11	J	MS mg/kg dry
7439-92-1	Lead, Total	222	J	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:50
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000091

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-12B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286608
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7440-38-2	Arsenic, Total	8.6	J	MS	mg/kg dry
7439-92-1	Lead, Total	71	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:55
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000092

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-5A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286609

7440-38-2	Arsenic, Total	10	J	MS	mg/kg dry
7439-92-1	Lead, Total	121	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	16:10
Date Received:	08/29/01
Time Received:	08:20

AWD
11/2/02

000093

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-5B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286610

7440-38-2	Arsenic, Total	5.5	J	MS	mg/kg dry
7439-92-1	Lead, Total	68	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	16:15
Date Received:	08/29/01
Time Received:	08:20

Aug
11/8/02

000094

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-14A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 286611

7440-38-2	Arsenic, Total	8.6	J	MS	mg/kg dry
7439-92-1	Lead, Total	89	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	16:30
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000095



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-10A

Data Qualifiers

Units

MS/MSD

C | Q | M

Lab Sample No:

286613

7440-38-2 Arsenic, Total

8.9 ^{AWD}

MS mg/kg dry

7439-92-1 Lead, Total

25

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

16:45

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000097

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-6A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286618

7440-38-2 Arsenic, Total

12

24ND

MS mg/kg dry

7439-92-1 Lead, Total

587

5

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

17:35

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000102



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-6B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286619

7440-38-2 Arsenic, Total

11

JAW

MS mg/kg dry

7439-92-1 Lead, Total

286

J

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

17:40

Date Received:

08/29/01

Time Received:

08:20

AJD
11/8/02

000103



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-3A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286620

7440-38-2	Arsenic, Total	38	<i>AWD</i> MS mg/kg dry
7439-92-1	Lead, Total	991	<i>J</i> MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:43
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000104

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

Subm: August 2001 Samples

CAS No.	R2SB-3B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286621

7440-38-2	Arsenic, Total	10	<i>AWD</i>	MS	mg/kg dry
7439-92-1	Lead, Total	1760	<i>J</i>	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:55
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Subm: August 2001 Samples

Phone: (616) 975-4500

CAS No.

R2SB-4A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286622

7440-38-2 Arsenic, Total

26

J AW

MS mg/kg dry

7439-92-1 Lead, Total

1980

J

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

17:50

Date Received:

08/29/01

Time Received:

08:20

AW
11/8/02

000106

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-4B

Data Qualifiers
C | Q | M

Units

Lab Sample No:

286623

7440-38-2 Arsenic, Total

12

DAWD
J

MS mg/kg dry

7439-92-1 Lead, Total

1380

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

17:55

Date Received:

08/29/01

Time Received:

08:20

AWD
11/6/01

000107

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-2A

Data Qualifiers
C | Q | M

Units

Lab Sample No:

286624

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

19
1290

JAW
J | MS mg/kg dry
| MS mg/kg dry

Sampled by:
Date Sampled:
Time Sampled:
Date Received:
Time Received:

Vennebush
08/23/01
18:05
08/29/01
08:20

fwd
11/8/02

000108



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-2B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286625

7440-38-2 Arsenic, Total

10

MS mg/kg dry

7439-92-1 Lead, Total

2760

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

18:10

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000109

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-38A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286635

7440-38-2 Arsenic, Total

6.5

| MS mg/kg dry

7439-92-1 Lead, Total

282

| J | MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:15

Date Received:

08/29/01

Time Received:

08:20

AWJ
11/8/2002

000119



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-38B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286636

7440-38-2 Arsenic, Total

5.2

MS mg/kg dry

7439-92-1 Lead, Total

175

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:20

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000120

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-38C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286637

7440-38-2 Arsenic, Total

6.6

7439-92-1 Lead, Total

271

MS mg/kg dry

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:25

Date Received:

08/29/01

Time Received:

08:20

11/8/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-37A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286638

7440-38-2 Arsenic, Total

9.2

7439-92-1 Lead, Total

366

MS mg/kg dry

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:40

Date Received:

08/29/01

Time Received:

08:20

AWJ
11/8/02

000122

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-37B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286639

7440-38-2 Arsenic, Total

8.0

MS mg/kg dry

7439-92-1 Lead, Total

509

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:45

Date Received:

08/29/01

Time Received:

08:20



000123

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-39A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286640

7440-38-2	Arsenic, Total	8.7		MS	mg/kg dry
7439-92-1	Lead, Total	383	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	08:55
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000124

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-39B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286641

7440-38-2	Arsenic, Total	7.9		MS	mg/kg dry
7439-92-1	Lead, Total	144	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	09:00
Date Received:	08/29/01
Time Received:	08:20

And
11/8/02

000125



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-44A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286642

7440-38-2 Arsenic, Total

7.8

MS mg/kg dry

7439-92-1 Lead, Total

252

J MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

09:15

Date Received:

08/29/01

Time Received:

08:20

Aug
11/8/02

000126



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-44B Data Qualifiers Units
C | Q | M

Lab Sample No: 286643

7440-38-2	Arsenic, Total	8.5		MS	mg/kg dry
7439-92-1	Lead, Total	108	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	09:20
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000127

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-43A

Data Qualifiers

Units

MS/MSD

C

Q

M

Lab Sample No:

286644

7440-38-2 Arsenic, Total

7.4

7439-92-1 Lead, Total

* 250

MS mg/kg dry

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

09:35

Date Received:

08/29/01

Time Received:

08:20

* See attached Statement of Data Qualifications.

AmD
11/8/02

000128



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-43B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286645

7440-38-2	Arsenic, Total	7.4	MS mg/kg dry
7439-92-1	Lead, Total	201	J MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	09:45
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000129

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-45A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286646

7440-38-2 Arsenic, Total

7.3

| MS mg/kg dry

7439-92-1 Lead, Total

140

| 5 | MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

10:25

Date Received:

08/29/01

Time Received:

08:20

Aug 11/8/02

000130

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-45B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286647

7440-38-2	Arsenic, Total	6.2		MS	mg/kg dry
7439-92-1	Lead, Total	85	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	10:30
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000131



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-41A	Data Qualifiers	Units
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C	Q	M
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Lab Sample No: 286648

7440-38-2	Arsenic, Total	5.9		MS	mg/kg dry
7439-92-1	Lead, Total	172	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:05
Date Received:	08/29/01
Time Received:	08:20

Aug
11/8/02

000132



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-41B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286649

7440-38-2	Arsenic, Total	5.9		MS	mg/kg dry
7439-92-1	Lead, Total	128	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:10
Date Received:	08/29/01
Time Received:	08:20

Aug 11/8/02

000133

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

R2SB-36A Data Qualifiers Units
C | Q | M

Lab Sample No: 286650

7440-38-2	Arsenic, Total	7.8		MS	mg/kg dry
7439-92-1	Lead, Total	310	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:20
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000134

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-36B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286651

7440-38-2 Arsenic, Total

6.1

MS mg/kg dry

7439-92-1 Lead, Total

109

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

11:25

Date Received:

08/29/01

Time Received:

08:20

Aug 11/8/02

000135



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-36C	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286652

7440-38-2	Arsenic, Total	9.0		MS	mg/kg dry
7439-92-1	Lead, Total	328	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:30
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000136



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-42A Data Qualifiers Units
C | Q | M

Lab Sample No: 286653

7440-38-2	Arsenic, Total	4.2		MS	mg/kg dry
7439-92-1	Lead, Total	165	J	MS	mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/27/01
Time Sampled: 11:40
Date Received: 08/29/01
Time Received: 08:20

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11/8/02

000137

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-42B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286654

7440-38-2	Arsenic, Total	3.9			MS	mg/kg dry
7439-92-1	Lead, Total	77		J		MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:45
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000138

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-35A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286655

7440-38-2 Arsenic, Total

3.7

7439-92-1 Lead, Total

191

| MS mg/kg dry

| J | MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

11:52

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000139

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

Subm: August 2001 Samples

CAS No.	R2SB-35B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286656
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7440-38-2	Arsenic, Total	4.7		MS	mg/kg dry
7439-92-1	Lead, Total	79	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:55
Date Received:	08/29/01
Time Received:	08:20

AWJ
11/8/02

000140

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-40A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286657

7440-38-2 Arsenic, Total

6.9

| J

MS mg/kg dry

7439-92-1 Lead, Total

422

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

12:50

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000141

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-40B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286658

7440-38-2 Arsenic, Total

4.0

7439-92-1 Lead, Total

50

| MS mg/kg dry

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

12:55

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000142

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-32A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286659

7440-38-2	Arsenic, Total	4.9		MS	mg/kg dry
7439-92-1	Lead, Total	286	5	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:05
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000143



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-32B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286660

7440-38-2 Arsenic, Total

4.2

MS mg/kg dry

7439-92-1 Lead, Total

91

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

13:10

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000144

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-33A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286661

7440-38-2 Arsenic, Total

6.3

7439-92-1 Lead, Total

202

| MS mg/kg dry

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

13:20

Date Received:

08/29/01

Time Received:

08:20

AWD
11/8/02

000145

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-33B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286662
----------------	--------

7440-38-2	Arsenic, Total	5.7		MS	mg/kg dry
7439-92-1	Lead, Total	67	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:22
Date Received:	08/29/01
Time Received:	08:20

AW
11/8/02

000146



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-33C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286663

7440-38-2 Arsenic, Total

4.5

MS mg/kg dry

7439-92-1 Lead, Total

250

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

13:25

Date Received:

08/29/01

Time Received:

08:20

AWT
11/8/02

000147



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-34A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286664

7440-38-2	Arsenic, Total	7.1	MS mg/kg dry
7439-92-1	Lead, Total	* 170	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:55
Date Received:	08/29/01
Time Received:	08:20

* See attached Statement of Data Qualifications.

AWD
11/8/02

000148

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-34B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286665
----------------	--------

7440-38-2	Arsenic, Total	4.1	MS	mg/kg dry
7439-92-1	Lead, Total	28	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	14:05
Date Received:	08/29/01
Time Received:	08:20

AWD
11/8/02

000149

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-23B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286688

7440-38-2 Arsenic, Total

13

MS mg/kg dry

7439-92-1 Lead, Total

105

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

11:15

Date Received:

08/30/01

Time Received:

07:50

AWD
11/8/02

000161

SERIAL DILUTIONS

Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	
As	286568	R2SED-8-A	36.1	37.95	5.22	0.097	4.85	Acceptable
Pb	286568	R2SED-8-A	8797.24	9510.73	8.11	0.029	1.45	Acceptable
As	286664	R2SB-34-A	7.1	6.77	4.35	0.097	4.85	Acceptable
Pb	286664	R2SB-34-A	196.07	170.04	13.27	0.029	1.45	Qualify
As	286644	R2SB-43-A	7.4	7.47	1.11	0.097	4.85	Acceptable
Pb	286644	R2SB-43-A	299.38	250.24	16.41	0.029	1.45	Qualify
As	286632	R2BG-4-A	3.1	2.79	10.11	0.097	4.85	Acceptable
Pb	286632	R2BG-4-A	63.80	65.19	2.17	0.029	1.45	Acceptable
As	286625	R2SB-2-B	10.4	10.38	0.39	0.097	4.85	Acceptable
Pb	286625	R2SB-2-B	2413.23	2821.16	16.90	0.029	1.45	Qualify
As	286613	R2SB-10-A	8.9	7.97	10.62	0.097	4.85	Qualify
Pb	286613	R2SB-10-A	25.49	22.84	10.41	0.029	1.45	Qualify
As	286591	R2SB-21-A	10.3	10.42	1.11	0.097	4.85	Acceptable
Pb	286591	R2SB-21-A	325.41	295.61	9.16	0.029	1.45	Acceptable

Associated Samples: (Pb+As)

R2SB-10A
R2SB-20A
R2SB-20B
R2SB-20C
R2SB-14A
R2SB-14B
R2SB-18A
R2SB-18B
R2SB-16A
R2SB-16B
R2SB-15A
R2SB-15B
R2SB-11A
R2SB-11B
R2SB-11C
R2SB-12A
R2SB-12B
R2SB-5A
R2SB-5B
R2SB-14A

Associated Samples:

R2SB-7A
R2SB-6A
R2SB-6B
R2SB-3A
R2SB-3B
R2SB-4A
R2SB-4B
R2SB-2A
R2SB-2B

Associated Samples:

R2SB-43A
R2SB-38A
R2SB-38B
R2SB-38C
R2SB-37A
R2SB-37B
R2SB-37A
R2SB-34B
R2SB-44A
R2SB-44B
R2SB-43B
R2SB-45A
R2SB-45B
R2SB-41A
R2SB-41B
R2SB-36A
R2SB-36B
R2SB-36C

Associated Samples:

R2SB-40B
R2SB-34A
R2SB-34B
R2SB-42A
R2SB-42B
R2SB-35A
R2SB-35B
R2SB-40A
R2SB-32A
R2SB-32B
R2SB-33A
R2SB-33B
R2SB-33C
R2SB-23B

AmD
11/11/2002

RMC - BEECHGROVE
Soil and Sediment Sampling, 8/21 - 8/28/2001
Trimatrix# 35132-30 Project# 98-478-04

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SED-1A	286553	8/21/01	Sediment		Arsenic	mg/kg	10		1
R2SED-1B	286554	8/21/01	Sediment		Arsenic	mg/kg	14		1
R2SED-2A	286555	8/21/01	Sediment		Arsenic	mg/kg	10		1
R2SED-2B	286556	8/21/01	Sediment		Arsenic	mg/kg	11		1
R2SED-3A	286557	8/21/01	Sediment		Arsenic	mg/kg	12		1
R2SED-3B	286558	8/21/01	Sediment		Arsenic	mg/kg	9.3		1
R2SED-4A	286559	8/21/01	Sediment		Arsenic	mg/kg	20		1
R2SED-4B	286560	8/21/01	Sediment		Arsenic	mg/kg	17		1
R2SED-5A	286561	8/21/01	Sediment		Arsenic	mg/kg	46		1
R2SED-5B	286562	8/21/01	Sediment		Arsenic	mg/kg	20		1
R2SED-5C	286563	8/21/01	Sediment	FD of R2SED-5A	Arsenic	mg/kg	39		1
R2SED-6A	286564	8/21/01	Sediment		Arsenic	mg/kg	44		1
R2SED-6B	286565	8/21/01	Sediment		Arsenic	mg/kg	35		1
R2SED-7A	286566	8/21/01	Sediment		Arsenic	mg/kg	39		1
R2SED-7B	286567	8/21/01	Sediment		Arsenic	mg/kg	26		1
R2SED-8A	286568	8/21/01	Sediment		Arsenic	mg/kg	36		1
R2SED-8B	286569	8/21/01	Sediment		Arsenic	mg/kg	23		1
R2SED-9A	286570	8/21/01	Sediment		Arsenic	mg/kg	29		1
R2SED-9B	286571	8/21/01	Sediment		Arsenic	mg/kg	11		1
R2SED-10A	286572	8/21/01	Sediment		Arsenic	mg/kg	9.4		1
R2SED-10B	286573	8/21/01	Sediment		Arsenic	mg/kg	7.2		1
R2SED-10C	286574	8/21/01	Sediment	FD of R2SED-10A	Arsenic	mg/kg	10		1
R2SB-1A	286575	8/23/01	Soil		Arsenic	mg/kg	141		3.2
R2SB-1B	286576	8/23/01	Soil		Arsenic	mg/kg	50		1
R2SB-8A	286577	8/23/01	Soil		Arsenic	mg/kg	13		1
R2SB-8B	286578	8/23/01	Soil		Arsenic	mg/kg	8.4		1
R2SB-9A	286579	8/23/01	Soil		Arsenic	mg/kg	47		1
R2SB-9B	286580	8/23/01	Soil		Arsenic	mg/kg	12		1
R2SB-13A	286581	8/23/01	Soil		Arsenic	mg/kg	53		1
R2SB-13B	286582	8/23/01	Soil		Arsenic	mg/kg	27		1
R2SB-17A	286583	8/23/01	Soil		Arsenic	mg/kg	25		1
R2SB-17B	286584	8/23/01	Soil		Arsenic	mg/kg	11		1
R2SB-17C	286585	8/23/01	Soil	FD of R2SB-17A	Arsenic	mg/kg	31		1
R2SB-24A	286586	8/23/01	Soil		Arsenic	mg/kg	13		1
R2SB-24B	286587	8/23/01	Soil		Arsenic	mg/kg	9.1		1
R2SB-23A	286588	8/23/01	Soil		Arsenic	mg/kg	10		1
R2SB-22A	286589	8/23/01	Soil		Arsenic	mg/kg	13		1
R2SB-22B	286590	8/23/01	Soil		Arsenic	mg/kg	12		1
R2SB-21A	286591	8/23/01	Soil		Arsenic	mg/kg	10		1
R2SB-21B	286592	8/23/01	Soil		Arsenic	mg/kg	7		1
R2SB-20A	286593	8/23/01	Soil		Arsenic	mg/kg	9.6	J	1
R2SB-20B	286594	8/23/01	Soil		Arsenic	mg/kg	4.4	J	1
R2SB-20C	286595	8/23/01	Soil	FD of R2SB-20A	Arsenic	mg/kg	6.4	J	1
R2SB-19A	286596	8/23/01	Soil		Arsenic	mg/kg	16	J	1
R2SB-19B	286597	8/23/01	Soil		Arsenic	mg/kg	14	J	1
R2SB-18A	286598	8/23/01	Soil		Arsenic	mg/kg	10	J	1
R2SB-18B	286599	8/23/01	Soil		Arsenic	mg/kg	6.3	J	1
R2SB-16A	286600	8/23/01	Soil		Arsenic	mg/kg	7.7	J	1
R2SB-16B	286601	8/23/01	Soil		Arsenic	mg/kg	9	J	1
R2SB-15A	286602	8/23/01	Soil		Arsenic	mg/kg	4.8	J	1

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-15B	286603	8/23/01	Soil		Arsenic	mg/kg	14	J	1
R2SB-11A	286604	8/23/01	Soil		Arsenic	mg/kg	14	J	1
R2SB-11B	286605	8/23/01	Soil		Arsenic	mg/kg	6.2	J	1
R2SB-11C	286606	8/23/01	Soil	FD of R2SB-11A	Arsenic	mg/kg	7.5	J	1
R2SB-12A	286607	8/23/01	Soil		Arsenic	mg/kg	11	J	1
R2SB-12B	286608	8/23/01	Soil		Arsenic	mg/kg	8.6	J	1
R2SB-5A	286609	8/23/01	Soil		Arsenic	mg/kg	10	J	1
R2SB-5B	286610	8/23/01	Soil		Arsenic	mg/kg	5.5	J	1
R2SB-14A	286611	8/23/01	Soil		Arsenic	mg/kg	8.6	J	1
R2SB-14B	286612	8/23/01	Soil		Arsenic	mg/kg	3.6		1
R2SB-10A	286613	8/23/01	Soil		Arsenic	mg/kg	8.9	J	1
R2SB-10B	286614	8/23/01	Soil		Arsenic	mg/kg	12		1
R2SB-7A	286615	8/23/01	Soil		Arsenic	mg/kg	9.6		1
R2SB-7B	286616	8/23/01	Soil		Arsenic	mg/kg	13		1
R2SB-7C	286617	8/23/01	Soil	FD of R2SB-7A	Arsenic	mg/kg	8.4		1
R2SB-6A	286618	8/23/01	Soil		Arsenic	mg/kg	12		1
R2SB-6B	286619	8/23/01	Soil		Arsenic	mg/kg	11		1
R2SB-3A	286620	8/23/01	Soil		Arsenic	mg/kg	38		1
R2SB-3B	286621	8/23/01	Soil		Arsenic	mg/kg	10		1
R2SB-4A	286622	8/23/01	Soil		Arsenic	mg/kg	26		1
R2SB-4B	286623	8/23/01	Soil		Arsenic	mg/kg	12		1
R2SB-2A	286624	8/23/01	Soil		Arsenic	mg/kg	19		1
R2SB-2B	286625	8/23/01	Soil		Arsenic	mg/kg	10		1
R2BG-1A	286626	8/24/01	Soil		Arsenic	mg/kg	9.8		1
R2BG-1B	286627	8/24/01	Soil		Arsenic	mg/kg	8		1
R2BG-2A	286628	8/24/01	Soil		Arsenic	mg/kg	10		1
R2BG-2B	286629	8/24/01	Soil		Arsenic	mg/kg	7.2		1
R2BG-3A	286630	8/24/01	Soil		Arsenic	mg/kg	6		1
R2BG-3B	286631	8/24/01	Soil		Arsenic	mg/kg	7.5		1
R2BG-4A	286632	8/24/01	Soil		Arsenic	mg/kg	3.1		1
R2BG-4B	286633	8/24/01	Soil		Arsenic	mg/kg	6.6		1
R2BG-4C	286634	8/24/01	Soil	FD of R2BG-4B	Arsenic	mg/kg	4.6		1
R2SB-38A	286635	8/27/01	Soil		Arsenic	mg/kg	6.5		1
R2SB-38B	286636	8/27/01	Soil		Arsenic	mg/kg	5.2		1
R2SE-23C	286637	8/27/01	Soil	FD of R2SB-38A	Arsenic	mg/kg	6.6		1
R2SB-37A	286638	8/27/01	Soil		Arsenic	mg/kg	9.2		1
R2SB-37B	286639	8/27/01	Soil		Arsenic	mg/kg	8		1
R2SB-39A	286640	8/27/01	Soil		Arsenic	mg/kg	8.7		1
R2SB-39B	286641	8/27/01	Soil		Arsenic	mg/kg	7.9		1
R2SB-44A	286642	8/27/01	Soil		Arsenic	mg/kg	7.8		1
R2SB-44B	286643	8/27/01	Soil		Arsenic	mg/kg	8.5		1
R2SB-43A	286644	8/27/01	Soil		Arsenic	mg/kg	7.4		1
R2SB-43B	286645	8/27/01	Soil		Arsenic	mg/kg	7.4		1
R2SB-45A	286646	8/27/01	Soil		Arsenic	mg/kg	7.3		1
R2SB-45B	286647	8/27/01	Soil		Arsenic	mg/kg	6.2		1
R2SB-41A	286648	8/27/01	Soil		Arsenic	mg/kg	5.9		1
R2SB-41B	286649	8/27/01	Soil		Arsenic	mg/kg	5.9		1
R2SB-36A	286650	8/27/01	Soil		Arsenic	mg/kg	7.8		1
R2SB-36B	286651	8/27/01	Soil		Arsenic	mg/kg	6.1		1
R2SB-36C	286652	8/27/01	Soil	FD of R2SB-36A	Arsenic	mg/kg	9		1

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-42A	286653	8/27/01	Soil		Arsenic	mg/kg	4.2		1
R2SB-42B	286654	8/27/01	Soil		Arsenic	mg/kg	3.9		1
R2SB-35A	286655	8/27/01	Soil		Arsenic	mg/kg	3.7		1
R2SB-35B	286656	8/27/01	Soil		Arsenic	mg/kg	4.7		1
R2SB-40A	286657	8/27/01	Soil		Arsenic	mg/kg	6.9		1
R2SB-40B	286658	8/27/01	Soil		Arsenic	mg/kg	4		1
R2SB-32A	286659	8/27/01	Soil		Arsenic	mg/kg	4.9		1
R2SB-32B	286660	8/27/01	Soil		Arsenic	mg/kg	4.2		1
R2SB-33A	286661	8/27/01	Soil		Arsenic	mg/kg	6.3		1
R2SB-33B	286662	8/27/01	Soil		Arsenic	mg/kg	5.7		1
R2SB-33C	286663	8/27/01	Soil	FD of R2SB-33A	Arsenic	mg/kg	4.5		1
R2SB-34A	286664	8/27/01	Soil		Arsenic	mg/kg	7.1		1
R2SB-34B	286665	8/27/01	Soil		Arsenic	mg/kg	4.1		1
EB-1-JLV	286666	8/21/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-2-JLV	286667	8/21/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-3-JLV	286668	8/23/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-4-JLV	286669	8/23/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-5-JLV	286670	8/23/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-6-JLV	286671	8/23/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-7-JLV	286672	8/24/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-8-JLV	286673	8/27/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-9-JLV	286674	8/27/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
EB-10-JLV	286675	8/27/01	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
Field Blank	286676	8/28/01	Aqueous	Field Blank	Arsenic	ug/L		U	1
R2SB-23B	286688	8/23/01	Soil		Arsenic	mg/kg	13		1

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SED-1A	286553	8/21/01	Sediment		Lead	mg/kg	1210	U	25
R2SED-1B	286554	8/21/01	Sediment		Lead	mg/kg	1550		25
R2SED-2A	286555	8/21/01	Sediment		Lead	mg/kg	1230	U	25
R2SED-2B	286556	8/21/01	Sediment		Lead	mg/kg	955	U	25
R2SED-3A	286557	8/21/01	Sediment		Lead	mg/kg	1570		25
R2SED-3B	286558	8/21/01	Sediment		Lead	mg/kg	6020	U	125
R2SED-4A	286559	8/21/01	Sediment		Lead	mg/kg	2480	U	63
R2SED-4B	286560	8/21/01	Sediment		Lead	mg/kg	1570		25
R2SED-5A	286561	8/21/01	Sediment		Lead	mg/kg	5410		125
R2SED-5B	286562	8/21/01	Sediment		Lead	mg/kg	1240		25
R2SED-5C	286563	8/21/01	Sediment	FD of R2SED-5A	Lead	mg/kg	5030		63
R2SED-6A	286564	8/21/01	Sediment		Lead	mg/kg	8430		125
R2SED-6B	286565	8/21/01	Sediment		Lead	mg/kg	3840		63
R2SED-7A	286566	8/21/01	Sediment		Lead	mg/kg	5480		125
R2SED-7B	286567	8/21/01	Sediment		Lead	mg/kg	2340		63
R2SED-8A	286568	8/21/01	Sediment		Lead	mg/kg	8190		125
R2SED-8B	286569	8/21/01	Sediment		Lead	mg/kg	2610		63
R2SED-9A	286570	8/21/01	Sediment		Lead	mg/kg	3630		63
R2SED-9B	286571	8/21/01	Sediment		Lead	mg/kg	471		6.3
R2SED-10A	286572	8/21/01	Sediment		Lead	mg/kg	84		1.3
R2SED-10B	286573	8/21/01	Sediment		Lead	mg/kg	25		0.6
R2SED-10C	286574	8/21/01	Sediment	FD of R2SED-10A	Lead	mg/kg	84		1.3
R2SB-1A	286575	8/23/01	Soil		Lead	mg/kg	1750		25
R2SB-1B	286576	8/23/01	Soil		Lead	mg/kg	1080		25
R2SB-8A	286577	8/23/01	Soil		Lead	mg/kg	197		3.2
R2SB-8B	286578	8/23/01	Soil		Lead	mg/kg	51		0.6
R2SB-9A	286579	8/23/01	Soil		Lead	mg/kg	3330		63
R2SB-9B	286580	8/23/01	Soil		Lead	mg/kg	287		6.3
R2SB-13A	286581	8/23/01	Soil		Lead	mg/kg	7390		125
R2SB-13B	286582	8/23/01	Soil		Lead	mg/kg	875		13
R2SB-17A	286583	8/23/01	Soil		Lead	mg/kg	4160		63
R2SB-17B	286584	8/23/01	Soil		Lead	mg/kg	267		3.2
R2SB-17C	286585	8/23/01	Soil	FD of R2SB-17A	Lead	mg/kg	3950		63
R2SB-24A	286586	8/23/01	Soil		Lead	mg/kg	779		13
R2SB-24B	286587	8/23/01	Soil		Lead	mg/kg	117		3.2
R2SB-23A	286588	8/23/01	Soil		Lead	mg/kg	463		6.3
R2SB-22A	286589	8/23/01	Soil		Lead	mg/kg	734		13
R2SB-22B	286590	8/23/01	Soil		Lead	mg/kg	188		3.2
R2SB-21A	286591	8/23/01	Soil		Lead	mg/kg	296		3.2
R2SB-21B	286592	8/23/01	Soil		Lead	mg/kg	84		1.3
R2SB-20A	286593	8/23/01	Soil		Lead	mg/kg	486	J	6.3
R2SB-20B	286594	8/23/01	Soil		Lead	mg/kg	129	J	3.2
R2SB-20C	286595	8/23/01	Soil	FD of R2SB-20A	Lead	mg/kg	447	J	6.3
R2SB-19A	286596	8/23/01	Soil		Lead	mg/kg	796	J	13
R2SB-19B	286597	8/23/01	Soil		Lead	mg/kg	250	J	3.2
R2SB-18A	286598	8/23/01	Soil		Lead	mg/kg	669	J	13
R2SB-18B	286599	8/23/01	Soil		Lead	mg/kg	122	J	3.2
R2SB-16A	286600	8/23/01	Soil		Lead	mg/kg	179	J	3.2
R2SB-16B	286601	8/23/01	Soil		Lead	mg/kg	125	J	3.2
R2SB-15A	286602	8/23/01	Soil		Lead	mg/kg	265	J	3.2
R2SB-15B	286603	8/23/01	Soil		Lead	mg/kg	184	J	3.2

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-11A	286604	8/23/01	Soil		Lead	mg/kg	360	J	6.3
R2SB-11B	286605	8/23/01	Soil		Lead	mg/kg	83	J	1.3
R2SB-11C	286606	8/23/01	Soil	FD of R2SB-11A	Lead	mg/kg	323	J	6.3
R2SB-12A	286607	8/23/01	Soil		Lead	mg/kg	222	J	3.2
R2SB-12B	286608	8/23/01	Soil		Lead	mg/kg	71	J	1.3
R2SB-5A	286609	8/23/01	Soil		Lead	mg/kg	121	J	3.2
R2SB-5B	286610	8/23/01	Soil		Lead	mg/kg	68	J	1.3
R2SB-14A	286611	8/23/01	Soil		Lead	mg/kg	89	J	1.3
R2SB-14B	286612	8/23/01	Soil		Lead	mg/kg	7.3		0.6
R2SB-10A	286613	8/23/01	Soil		Lead	mg/kg	25	J	0.6
R2SB-10B	286614	8/23/01	Soil		Lead	mg/kg	10		0.6
R2SB-7A	286615	8/23/01	Soil		Lead	mg/kg	78	J	1.3
R2SB-7B	286616	8/23/01	Soil		Lead	mg/kg	35		0.6
R2SB-7C	286617	8/23/01	Soil	FD of R2SB-7A	Lead	mg/kg	49	J	0.6
R2SB-6A	286618	8/23/01	Soil		Lead	mg/kg	587	J	6.3
R2SB-6B	286619	8/23/01	Soil		Lead	mg/kg	286	J	3.2
R2SB-3A	286620	8/23/01	Soil		Lead	mg/kg	991	J	13
R2SB-3B	286621	8/23/01	Soil		Lead	mg/kg	1760	J	25
R2SB-4A	286622	8/23/01	Soil		Lead	mg/kg	1980	J	25
R2SB-4B	286623	8/23/01	Soil		Lead	mg/kg	1380	J	25
R2SB-2A	286624	8/23/01	Soil		Lead	mg/kg	1290	J	25
R2SB-2B	286625	8/23/01	Soil		Lead	mg/kg	2760	J	63
R2SB-38A	286635	8/27/01	Soil		Lead	mg/kg	282	J	6.3
R2SB-38B	286636	8/27/01	Soil		Lead	mg/kg	175	J	3.2
R2SB-38C	286637	8/27/01	Soil	FD of R2SB-38A	Lead	mg/kg	271	J	6.3
R2SB-37A	286638	8/27/01	Soil		Lead	mg/kg	366	J	6.3
R2SB-37B	286639	8/27/01	Soil		Lead	mg/kg	509	J	6.3
R2SB-39A	286640	8/27/01	Soil		Lead	mg/kg	383	J	6.3
R2SB-39B	286641	8/27/01	Soil		Lead	mg/kg	144	J	3.2
R2SB-44A	286642	8/27/01	Soil		Lead	mg/kg	252	J	3.2
R2SB-44B	286643	8/27/01	Soil		Lead	mg/kg	108	J	3.2
R2SB-43A	286644	8/27/01	Soil		Lead	mg/kg	250	J	3.2
R2SB-43B	286645	8/27/01	Soil		Lead	mg/kg	201	J	3.2
R2SB-45A	286646	8/27/01	Soil		Lead	mg/kg	140	J	3.2
R2SB-45B	286647	8/27/01	Soil		Lead	mg/kg	85	J	1.3
R2SB-41A	286648	8/27/01	Soil		Lead	mg/kg	172	J	3.2
R2SB-41B	286649	8/27/01	Soil		Lead	mg/kg	128	J	3.2
R2SB-36A	286650	8/27/01	Soil		Lead	mg/kg	310	J	6.3
R2SB-36B	286651	8/27/01	Soil		Lead	mg/kg	109	J	3.2
R2SB-36C	286652	8/27/01	Soil	FD of R2SB-36A	Lead	mg/kg	328	J	6.3
R2SB-42A	286653	8/27/01	Soil		Lead	mg/kg	165	J	3.2
R2SB-42B	286654	8/27/01	Soil		Lead	mg/kg	77	J	1.3
R2SB-35A	286655	8/27/01	Soil		Lead	mg/kg	191	J	3.2
R2SB-35B	286656	8/27/01	Soil		Lead	mg/kg	79	J	1.3
R2SB-40A	286657	8/27/01	Soil		Lead	mg/kg	422	J	6.3
R2SB-40B	286658	8/27/01	Soil		Lead	mg/kg	50	J	0.6
R2SB-32A	286659	8/27/01	Soil		Lead	mg/kg	286	J	6.3
R2SB-32B	286660	8/27/01	Soil		Lead	mg/kg	91	J	1.3
R2SB-33A	286661	8/27/01	Soil		Lead	mg/kg	202	J	3.2
R2SB-33B	286662	8/27/01	Soil		Lead	mg/kg	67	J	1.3
R2SB-33C	286663	8/27/01	Soil	FD of R2SB-33A	Lead	mg/kg	250	J	6.3

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-34A	286664	8/27/01	Soil		Lead	mg/kg	170	J	3.2
R2SB-34B	286665	8/27/01	Soil		Lead	mg/kg	28	J	0.6
EB-1-JLV	286666	8/21/01	Aqueous	Equipment Blank	Lead	ug/L	11		1
EB-2-JLV	286667	8/21/01	Aqueous	Equipment Blank	Lead	ug/L	5.8		1
EB-3-JLV	286668	8/23/01	Aqueous	Equipment Blank	Lead	ug/L	2.8		1
EB-4-JLV	286669	8/23/01	Aqueous	Equipment Blank	Lead	ug/L	2.3		1
EB-5-JLV	286670	8/23/01	Aqueous	Equipment Blank	Lead	ug/L	1.7		1
EB-6-JLV	286671	8/23/01	Aqueous	Equipment Blank	Lead	ug/L	1.6		1
EB-7-JLV	286672	8/24/01	Aqueous	Equipment Blank	Lead	ug/L	8.6		1
EB-8-JLV	286673	8/27/01	Aqueous	Equipment Blank	Lead	ug/L		U	1
EB-9-JLV	286674	8/27/01	Aqueous	Equipment Blank	Lead	ug/L		U	1
EB-10-JLV	286675	8/27/01	Aqueous	Equipment Blank	Lead	ug/L	2.9		1
Field Blank	286676	8/28/01	Aqueous	Field Blank	Lead	ug/L		U	1
R2SB-23B	286688	8/23/01	Soil		Lead	mg/kg	105	J	1.3



11/11/2002



APPENDIX C
Data Validation Report of Groundwater and Soil Samples Collected
on September 22 and 24, 2001

DATA VALIDATION REPORT
OF
GROUNDWATER AND SOIL SAMPLES
COLLECTED ON SEPTEMBER 22 AND 24, 2001
FOR
INORGANIC ANALYSES

Sample Delivery Group No. 35132-31

PREPARED FOR:

Refined Metals Corporation
Beech Grove, Indiana

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

November 6, 2001
Project Number 2001-824-00

DATA VALIDATION REPORT INORGANICS

INTRODUCTION

This data validation report addresses the inorganic results from the groundwater and soil samples collected on September 22 and 24, 2001, as part of the RMC Beech Grove, Indiana, Pre-Remedial Design (RD) sampling event. The soil samples were analyzed by Trimatrix in Grand Rapids, Michigan for lead and arsenic by USEPA SW-846 method 6020. Groundwater samples were analyzed for inorganics (antimony, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) by USEPA SW-846 methods 6020 and 7000 series. The data were reported by Trimatrix under sample delivery group (SDG) 35132-31.

This review has been performed with guidance from the Indiana Department of Environmental Management's *Guidance to the Performance and Presentation of Analytical Chemistry Data* (July 1998) and the U.S. EPA's *National Functional Guideline for Inorganic Data Review* (Feb. 1994). The findings presented in this report are based upon a review of all data supplied by the laboratory.

1. Timeliness

All samples were prepared and analyzed within holding time limits of 6 months (28 days for mercury).

2. Sample Preparation

All sample preparation procedures were in accordance with the method protocols.

3. Calibration

Soil samples were analyzed for arsenic and lead by ICP-MS. The groundwater samples were analyzed for antimony, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver by ICP-MS and CVAA. The instruments were standardized according to the analytical method using one blank and a single calibration standard for each element. All calibrations (ICVs) were performed as required and met the criteria for acceptance.

4. Reference Control Samples/Calibration Verification

Reference control samples (CCVs) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. Control limits for the ICP-MS reference sample are 90-110 percent (80-120 percent for mercury) of the certified value. All recoveries met the acceptance criteria for control samples.

5. Blanks

No target analytes were detected in laboratory or field blanks.

6. ICP Interference Check Sample

The interference check sample (LCS) is analyzed by ICP-MS to verify interelement and background correction factors. Analysis was performed as required at the beginning and end of each sample analysis run and recoveries were within the specified criteria of 80-120 percent.

7. Duplicate Analysis

The relative percent differences (RPDs) were within the control limit of 20 percent for aqueous samples and 35 percent for solid samples.

8. Field Duplicates

Sample MW-3/MW-3A and R2SB-46-B/R2SB-46-C were field duplicates. Results exhibited reasonable agreement.

9. Matrix Spike Analysis

The matrix spike (MS) percent recoveries were within the QC limits of 75-125 percent (soil matrices) and 80-120 percent (aqueous matrices), with the exception of the following:

Matrix	MS or MSD	Parameter	Spike Added	Sample Conc	Spiked Conc	%R
GW	MS	Silver	50	0.2 U	18.1	36%
GW	MSD	Silver	50	0.2 U	17.3	35%
GW	MS	Selenium	50	3.7	69.5	132%
GW	MSD	Selenium	50	3.7	67.3	127%
Soil	MSD	Arsenic	31.2	9.0	31.0	71%

The associated sample results and reporting limits were qualified as estimated (J/UJ).

10. Laboratory Control Sample (LCS)

The laboratory control sample (LCS) percent recoveries were within the QC limits of 80-120 percent.

11. ICP Serial Dilution

All concentrations were either less than 50 times the instrument detection limit (IDL) or greater than 50 times the IDL with the percent differences that were ± 10 percent of the serial dilution result.

DATA VALIDATION REPORT
VALIDATION SUMMARY

SUMMARY

All the data is useable as qualified.

DATA QUALIFIERS

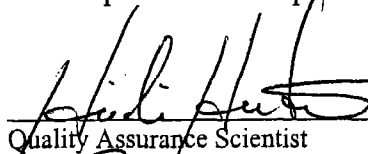
The following qualifiers were used to modify the data quality and usefulness of individual analytical results.

- U - The analyte was not detected at the given quantitation limit.
- J - The analyte was positively identified and detected; however, the concentration is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
- UJ - The analyte was not detected; the associated quantitation limit is an estimated value.
- D - The value was obtained from a reanalysis of a diluted sample.
- E - Concentration reported is estimated, the concentration exceeded the instrument's calibration range. The sample should be diluted.
- R - The value reported has been rejected.

DATA ASSESSMENT

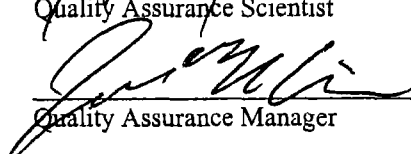
Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory and not directly involved in the project.

This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgement the data are acceptable for use except where qualified with qualifiers which modify the usefulness of those individual values.



Quality Assurance Scientist

11/6/01
Date



Quality Assurance Manager

11/6/2001
Date

INORGANIC DATA VALIDATION SUMMARY

Site Name: RMC Beachgrove
 Project Number: _____
 Sampling Date(s): _____

Laboratory: Trimatrix
 Case /Order No.: 35132-31

Compound List: ☐ TAL ☐ Priority Pollutant ☐ Appendix IX ☒ Other Pb, As
 Method: ☐ CLP SOW ILMO4. ☐ 40 CFR 136 ☒ SW-846 Method 6010 ☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			
Initial Calibrations	✓			
Continuing Calibrations	✓			
CRDL Standards	✓			
Blank Analysis Results	✓			
ICP Interference Check Sample Recoveries	✓			
Duplicate Results	✓			
Field Duplicate Results	✓			
Spike Analysis Recoveries	✓		✓	
Serial Dilution Results	✓			
Laboratory Control Sample Results	✓			
Furnace AA QC Analysis	✓			
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments: _____

Accept - No qualification required.
 FYI - For your information only, no qualification necessary.
 Qualify - Qualify as rejected, estimated or biased
 NA - Not applicable.
 NR - Not reviewed.

QA Scientist [Signature]
 Date 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		MW-9	Data Qualifiers	Units
			C Q M	
	Lab Sample No:	288677		
7440-36-0	Antimony, Total	<10		MS ug/L
7440-38-2	Arsenic, Total	7.7		MS ug/L
7440-39-3	Barium, Total	137		MS ug/L
7440-43-9	Cadmium, Total	<0.2		MS ug/L
7440-47-3	Chromium, Total	<1.0		MS ug/L
7439-92-1	Lead, Total	1.6		MS ug/L
7439-97-6	Mercury, Total	<0.2		CV ug/L
7782-49-2	Selenium, Total	<2.0		MS ug/L
7440-22-4	Silver, Total	<0.2 UJ	UJ	MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	09:40
Date Received:	09/25/01
Time Received:	08:30

HLR 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-1	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 288678

7440-36-0	Antimony, Total	<10			MS	ug/L
7440-38-2	Arsenic, Total	33			MS	ug/L
7440-39-3	Barium, Total	101			MS	ug/L
7440-43-9	Cadmium, Total	0.2			MS	ug/L
7440-47-3	Chromium, Total	3.1			MS	ug/L
7439-92-1	Lead, Total	5.9			MS	ug/L
7439-97-6	Mercury, Total	<0.2			CV	ug/L
7782-49-2	Selenium, Total	6.1	J		MS	ug/L
7440-22-4	Silver, Total	<0.2	UJ		MS	ug/L

Sampled by: BMG/SM
Date Sampled: 09/22/01
Time Sampled: 11:19
Date Received: 09/25/01
Time Received: 08:30

* See attached Statement of Data Qualifications.

HLH 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM,1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-2	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288679

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	12	MS ug/L
7440-39-3	Barium, Total	31	MS ug/L
7440-43-9	Cadmium, Total	0.3	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	49	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	12:36
Date Received:	09/25/01
Time Received:	08:30

HLT 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-7 MS/MSD	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 288680

7440-36-0	Antimony, Total	<10			MS	ug/L
7440-38-2	Arsenic, Total	25			MS	ug/L
7440-39-3	Barium, Total	21			MS	ug/L
7440-43-9	Cadmium, Total	<0.2			MS	ug/L
7440-47-3	Chromium, Total	<1.0			MS	ug/L
7439-92-1	Lead, Total	19			MS	ug/L
7439-97-6	Mercury, Total	<0.2			CV	ug/L
7782-49-2	Selenium, Total	3.7		J	MS	ug/L
7440-22-4	Silver, Total	*<0.2		U J	MS	ug/L

Sampled by: BMG/SM
Date Sampled: 09/22/01
Time Sampled: 13:38
Date Received: 09/25/01
Time Received: 08:30

* See attached Statement of Data Qualifications.

H2H 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-8	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 288681

7440-36-0	Antimony, Total	14		MS	ug/L
7440-38-2	Arsenic, Total	5.1		MS	ug/L
7440-39-3	Barium, Total	133		MS	ug/L
7440-43-9	Cadmium, Total	0.8		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	21		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2	UJ	MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	16:31
Date Received:	09/25/01
Time Received:	08:30

ALH 11/6/01

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
 Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-3	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288682

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	9.7	MS ug/L
7440-39-3	Barium, Total	102	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	1.3	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	16:31
Date Received:	09/25/01
Time Received:	08:30

HLM
 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.		MW-3A	Data Qualifiers	Units
			C Q M	
	Lab Sample No:	288683		
7440-36-0	Antimony, Total	<10		MS ug/L
7440-38-2	Arsenic, Total	9.8		MS ug/L
7440-39-3	Barium, Total	101		MS ug/L
7440-43-9	Cadmium, Total	<0.2		MS ug/L
7440-47-3	Chromium, Total	<1.0		MS ug/L
7439-92-1	Lead, Total	1.4		MS ug/L
7439-97-6	Mercury, Total	<0.2		CV ug/L
7782-49-2	Selenium, Total	4.7	J	MS ug/L
7440-22-4	Silver, Total	<0.2	UJ	MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	16:51
Date Received:	09/25/01
Time Received:	08:30

* See attached Statement of Data Qualifications.

HLH
11/6/0



ANALYTICAL REPORT
USEPA CLP FORM.1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB1-092201 Data Qualifiers Units
C | Q | M

Lab Sample No: 288684

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-39-3	Barium, Total	<10	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L

Sampled by: BMG/SM
Date Sampled: 09/22/01
Time Sampled: 17:00
Date Received: 09/25/01
Time Received: 08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-5	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288685

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	7.6	MS	ug/L
7440-39-3	Barium, Total	170	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	2.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	10:26
Date Received:	09/25/01
Time Received:	08:30

ALH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-4	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 288686

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-39-3	Barium, Total	197		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2	UJ	MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	11:29
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-6	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288687

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	1.9	MS	ug/L
7440-39-3	Barium, Total	92	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	VJ MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	12:55
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB2-092401 Data Qualifiers Units
C | Q | M

Lab Sample No: 288688

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-39-3	Barium, Total	<10		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2	UJ	MS	ug/L

Sampled by: BMG/SM
Date Sampled: 09/24/01
Time Sampled: 13:30
Date Received: 09/25/01
Time Received: 08:30

11/16/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-46-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	288689
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7440-38-2	Arsenic, Total	6.9	J	MS	mg/kg dry
7439-92-1	Lead, Total	34		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	14:35
Date Received:	09/25/01
Time Received:	08:30

HLH
1/4/02



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-46-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288690

7440-38-2 Arsenic, Total

6.5

J

MS mg/kg dry

7439-92-1 Lead, Total

41

MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

14:41

Date Received:

09/25/01

Time Received:

08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-46-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	288691
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7440-38-2	Arsenic, Total	6.1	J	MS	mg/kg dry
7439-92-1	Lead, Total	38		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	14:48
Date Received:	09/25/01
Time Received:	08:30

HLH
10/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-47-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	288692
----------------	--------

7440-38-2	Arsenic, Total	6.7	J	MS	mg/kg dry
7439-92-1	Lead, Total	45		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	14:56
Date Received:	09/25/01
Time Received:	08:30

H/LH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-47-B Data Qualifiers Units
MS/MSD C | Q | M

Lab Sample No: 288693

7440-38-2	Arsenic, Total	9.0	J	MS	mg/kg dry
7439-92-1	Lead, Total	24		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:01
Date Received:	09/25/01
Time Received:	08:30

H/H
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-48-A Data Qualifiers Units
C | Q | M

Lab Sample No: 288694

7440-38-2	Arsenic, Total	6.5	J	MS	mg/kg dry
7439-92-1	Lead, Total	41		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:09
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-48-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 288695

7440-38-2	Arsenic, Total	6.7	J	MS	mg/kg dry
7439-92-1	Lead, Total	45		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:14
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-49-A Data Qualifiers Units
C | Q | M

Lab Sample No:

288696

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

8.0

47

J

MS mg/kg dry

MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

15:21

Date Received:

09/25/01

Time Received:

08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-49-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288697

7440-38-2 Arsenic, Total

9.7

J

MS mg/kg dry

7439-92-1 Lead, Total

117

MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

15:25

Date Received:

09/25/01

Time Received:

08:30

ALH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-50-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288698

7440-38-2 Arsenic, Total

6.9

| J

| MS mg/kg dry

7439-92-1 Lead, Total

34

|

| MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

15:33

Date Received:

09/25/01

Time Received:

08:30

HLH
4/6/01

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-50-B Data Qualifiers Units
C | Q | M

Lab Sample No:

288699

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

7.0
36

| J

| MS mg/kg dry
| MS mg/kg dry

Sampled by:
Date Sampled:
Time Sampled:
Date Received:
Time Received:

BMG/SM
09/24/01
15:38
09/25/01
08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB3-092401 Data Qualifiers Units

C | Q | M

Lab Sample No: 288700

7440-38-2	Arsenic, Total	<1.0	J	MS ug/L
7439-92-1	Lead, Total	<1.0		MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:55
Date Received:	09/25/01
Time Received:	08:30

ALL
11/6/01

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -31

Matrix

WATER

Lab Sample No.

288680

Sample ID. MW-7MS/MSD

Units

ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Total	70 - 138	52.2	<10	50	104	MS
Antimony, Total	70 - 138	49.2	<10	50	98	MS
Arsenic, Total	59 - 164	83.2	25	50	116	MS
Arsenic, Total	59 - 164	83.9	25	50	118	MS
Barium, Total	53 - 142	74.7	21	50	107	MS
Barium, Total	53 - 142	76.8	21	50	112	MS
Cadmium, Total	74 - 127	53.6	<0.2	50	107	MS
Cadmium, Total	74 - 127	54.8	<0.2	50	110	MS
Lead, Total	75 - 134	72.0	19	50	106	MS
Lead, Total	75 - 134	75.7	19	50	113	MS
Mercury, Total	59 - 158	2.67	<0.2	2.5	107	CV
Mercury, Total	59 - 158	2.58	<0.2	2.5	103	CV
Selenium, Total	59 - 155	69.5	3.7	50	132	MS
Selenium, Total	59 - 155	67.3	3.7	50	127	MS
Silver, Total	69 - 128	18.1	<0.2	50	36	MS
Silver, Total	69 - 128	17.3	<0.2	50	35	MS

HLF
11/6/01
000077

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No.	35132 -31	Matrix	SOIL
Sample ID.	R2SB-47-BMS/MSD	Lab Sample No.	288693
		Units	mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	36.0	9.0	31.2	87	MS
Arsenic, Total	60 - 141	31.0	9.0	31.2	71	MS
Lead, Total	74 - 132	48.6	24	31.2	79	MS
Lead, Total	74 - 132	47.9	24	31.2	77	MS

HLH
11/6/01
000078

Field Duplicates

Criteria	Aqueous	Solid
Both results < 5*EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$
Both results > 5*EQL	$\pm 25\%$	$\pm 40\%$
One result < EQL, one result > EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$

	R2SB-46-B	R2SB-46-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	6.5	6.1	1	5	2.5	6.35	Acceptable
Lead	41	38	1	5	2.5	7.59	Acceptable

H/WH
11/6/01

Field Duplicates

Criteria	Aqueous	Solid
Both results < 5*EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$
Both results > 5*EQL	$\pm 25\%$	$\pm 40\%$
One result < EQL, one result > EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$

	MW-3	MW-3A	EQL	5*EQL	1.5*EQL	RPD/Difference	
Antimony	U	U					
Arsenic	9.7	9.8	1	5	1.5	1.03	Acceptable
Barium	102	101	10	50	15	0.99	Acceptable
Cadmium	U	U					
Chromium	U	U					
Lead	1.3	1.4	1	5	1.5	0.1	Acceptable
Mercury	U	U					
Selenium	U	4.7	2	10	3	NC	
Silver	U	U					

NC - not calculable

HLH
11/6/01

SERIAL DILUTIONS

Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	
Sb	288680	MW-7	U					NC
As	288680	MW-7	24.7	27.00	9.29	0.105	5.25	Acceptable
Se	288680	MW-7	6.95	9.95	43.12	0.191	9.55	
Ag	288680	MW-7	0.07	0.26	273.9	0.012	0.6	
Cd	288680	MW-7	U					NC
Cr	288680	MW-7	U					NC
Ba	288680	MW-7	21.29	22.69	6.59	0.2	10	Acceptable
Pb	288680	MW-7	19.29	19.47	0.93	0.022	1.1	Acceptable

10/9/11
H/LH
H/LH

SERIAL DILUTIONS

Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	
As	288693	R2SB-47-B	9.0	9.02	0.32	0.105	5.25	Acceptable
Pb	288693	R2SB-47-B	23.86	24.42	2.32	0.022	1.1	Acceptable

HLH
11/6/01

RMC - MEMPHIS
Groundwater Sampling, 9/22 - 9/24/2001
Trimatrix# 35132-31 Project# 98-478-00

Page 1 of 2

Sample Location		MW-9			MW-1			MW-2			MW-7			MW-8			MW-3			MW-3A			EB-1-092201		
Lab ID		288677			288678			288679			288680			288681			288682			288683			288684		
Sample Date		09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous		
Remarks																				FD of MW-3			Equipment Blank		
Parameter	Units	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	ug/L		U	10		U	10		U	10		U	10	14		10		U	10		U	10		U	10
Arsenic	ug/L	7.7		1	33		1	12		1	25		1	5.1		1	9.7		1	9.8		1		U	1
Barium	ug/L	137		10	101		10	31		10	21		10	133		10	102		10	101		10		U	10
Cadmium	ug/L		U	0.2	0.2		0.2	0.3		0.2		U	0.2	0.8		0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L		U	1	3.1		1		U	1		U	1		U	1		U	1		U	1		U	1
Lead	ug/L	1.6		1	5.9		1	49		1	19		1	21		1	1.3		1	1.4		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2	6.1	J	2		U	2	3.7	J	2		U	2		U	2	4.7	J	2		U	2
Silver	ug/L		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2

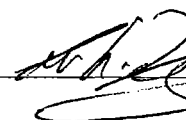
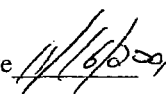
RMC - MEMPHIS

Groundwater Sampling, 9/22 - 9/24/2001

Trimatrix# 35132-31 Project# 98-478-00

Page 2 of 2

Sample Location		MW-5			MW-4			MW-6			EB-1-092401		
Lab ID		288685			288686			288687			288688		
Sample Date		09/24/2001			09/24/2001			09/24/2001			09/24/2001		
Matrix		Groundwater			Groundwater			Groundwater			Aqueous		
Remarks											Equipment Blank		
Parameter	Units	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	ug/L		U	10		U	10		U	10		U	10
Arsenic	ug/L	7.6		1		U	1	1.9		1		U	1
Barium	ug/L	170		10	197		10	92		10		U	10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L		U	1		U	1		U	1		U	1
Lead	ug/L	2		1		U	1		U	1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2		U	2		U	2		U	2
Silver	ug/L		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2

RMC - BEECHGROVE
Soil Sampling, 9/24/2001
Trimatrix# 35132-31 Project# 98-478-04

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-46-A	288689	09/24/2001	Soil		Arsenic	mg/kg	6.9	J	1
R2SB-46-B	288690	09/24/2001	Soil		Arsenic	mg/kg	6.5	J	1
R2SB-46-C	288691	09/24/2001	Soil	FD of R2SB-46-B	Arsenic	mg/kg	6.1	J	1
R2SB-47-A	288692	09/24/2001	Soil		Arsenic	mg/kg	6.7	J	1
R2SB-47-B	288693	09/24/2001	Soil		Arsenic	mg/kg	9	J	1
R2SB-48-A	288694	09/24/2001	Soil		Arsenic	mg/kg	6.5	J	1
R2SB-48-B	288695	09/24/2001	Soil		Arsenic	mg/kg	6.7	J	1
R2SB-49-A	288696	09/24/2001	Soil		Arsenic	mg/kg	8	J	1
R2SB-49-B	288697	09/24/2001	Soil		Arsenic	mg/kg	9.7	J	1
R2SB-50-A	288698	09/24/2001	Soil		Arsenic	mg/kg	6.9	J	1
R2SB-50-B	288699	09/24/2001	Soil		Arsenic	mg/kg	7	J	1
EB-3-092401	288700	09/24/2001	Aqueous	Equipment Blank	Arsenic	ug/L		UJ	1

RMC - BEECHGROVE
Soil Sampling, 9/24/2001
Trimatrix# 35132-31 Project# 98-478-00

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-46-A	288689	09/24/2001	Soil		Lead	mg/kg	34		0.6
R2SB-46-B	288690	09/24/2001	Soil		Lead	mg/kg	41		0.6
R2SB-46-C	288691	09/24/2001	Soil	FD of R2SB-46-B	Lead	mg/kg	38		0.6
R2SB-47-A	288692	09/24/2001	Soil		Lead	mg/kg	45		0.6
R2SB-47-B	288693	09/24/2001	Soil		Lead	mg/kg	24		0.6
R2SB-48-A	288694	09/24/2001	Soil		Lead	mg/kg	41		0.6
R2SB-48-B	288695	09/24/2001	Soil		Lead	mg/kg	45		0.6
R2SB-49-A	288696	09/24/2001	Soil		Lead	mg/kg	47		0.6
R2SB-49-B	288697	09/24/2001	Soil		Lead	mg/kg	117		3.2
R2SB-50-A	288698	09/24/2001	Soil		Lead	mg/kg	34		0.6
R2SB-50-B	288699	09/24/2001	Soil		Lead	mg/kg	36		0.6
EB-3-092401	288700	09/24/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1



APPENDIX D
Data Validation Report of Groundwater and Soil Samples Collected
on December 10-14, 2001

DATA VALIDATION REPORT
OF
GROUNDWATER AND SOIL SAMPLES
COLLECTED ON DECEMBER 10 - 14, 2001
FOR
INORGANIC ANALYSES

Sample Delivery Group No. 35132-32/33/34

PREPARED FOR:

Refined Metals Corporation
Beech Grove, Indiana

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

April 24, 2002
Project Number 98-478-00

DATA VALIDATION REPORT INORGANICS

INTRODUCTION

This data validation report addresses the inorganic results from the groundwater, sediment, soil samples collected on December 10-14, 2001, as part of the RMC Beech Grove, Indiana, Pre-Remedial Design (RD) sampling event. The soil and sediment samples were analyzed by Trimatrix in Grand Rapids, Michigan for lead and arsenic by USEPA SW-846 method 6020. Groundwater samples were analyzed for total and dissolved inorganics (antimony, arsenic, barium, cadmium, chromium, lead, selenium, silver) and total mercury by USEPA SW-846 methods 6020 and 7000 series. The data were reported by Trimatrix under sample delivery group (SDG) 35132-32/33/34.

This review has been performed with guidance from the Indiana Department of Environmental Management's *Guidance to the Performance and Presentation of Analytical Chemistry Data* (July 1998) and the U.S. EPA's *National Functional Guideline for Inorganic Data Review* (Feb. 1994). The findings presented in this report are based upon a review of all data supplied by the laboratory.

1. Timeliness

All samples were prepared and analyzed within holding time limits of 6 months (28 days for mercury).

2. Sample Preparation

All sample preparation procedures were in accordance with the method protocols.

3. Calibration

Soil and sediment samples were analyzed for arsenic and lead by ICP-MS. The groundwater samples were analyzed for total and dissolved (antimony, arsenic, barium, cadmium, chromium, lead, selenium, silver) and total mercury by ICP-MS and CVAA. The instruments were standardized according to the analytical method using one blank and a single calibration standard for each element. All calibrations (ICVs) were performed as required and met the criteria for acceptance.

4. Reference Control Samples/Calibration Verification

Reference control samples (CCVs) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. Control limits for the ICP-MS reference sample are 90-

110 percent (80-120 percent for mercury) of the certified value. All recoveries met the acceptance criteria for control samples.

5. Blanks

No target analytes were detected in laboratory or field blanks, with the exception of the following:

Blank ID	Parameter	Conc	Associated Samples
Method Blank 71626	Lead	2.2 mg/kg	R2SB-53-A, R2SB-53-B, R2SB-53-BD, CSB-30A-A, CSB-30A-B, CSB-30A-C, CSB-30A-D, CSB-30A-E, CSB-30A-CD, CSB-10A-E, CSB-32A-D, CSB-32A-E, CSB-10A-A, CSB-10A-B, CSB-10A-D, CSB-32A-A, CSB-32A-B, CSB-32A-C, CSB-10A-CD, CSB-10A-C
EB-6-121301	Lead	2.6 µg/L	R2SB-52-AD, R2SB-53-A, R2SB-53-B, R2SB-53-BD
EB-1-121401	Lead	1.4 µg/L	CSB-35A-A, CSB-35A-B, CSB-35A-C, CSB-35A-D, CSB-35A-E, CSB-35A-F, CSB-35A-G, CSB-35A-H, CSB-35A-I, CSB-35A-J, CSB-35A-HD, CSB-26A-A, CSB-26A-B, CSB-26A-C, CSB-26A-D, CSB-26A-E
EB-2-121401	Lead	2.1 µg/L	CSB-35A-A, CSB-35A-B, CSB-35A-C, CSB-35A-D, CSB-35A-E, CSB-35A-F, CSB-35A-G, CSB-35A-H, CSB-35A-I, CSB-35A-J, CSB-35A-HD, CSB-26A-A, CSB-26A-B, CSB-26A-C, CSB-26A-D, CSB-26A-E

Sample results less than five times the blank concentration were qualified as undetected (U) due to blank contamination.

6. ICP Interference Check Sample

The interference check sample (LCS) is analyzed by ICP-MS to verify interelement and background correction factors. Analysis was performed as required at the beginning and end of each sample analysis run and recoveries were within the specified criteria of 80-120 percent.

7. Duplicate Analysis

The relative percent differences (RPDs) were within the control limit of 20 percent for aqueous samples and 35 percent for solid samples.

8. Field Duplicates

Sample MW-3/MW-3A, R2SED-7/R2SED-7D, R2SB-4A-A/R2SB-4A-AD, R2SB-2A-A/R2SB-2A-AD, R2SB-1A-C/R2SB-1A-CD, R2SB-52-A/R2SB-52-AD, R2SB-53-B/R2SB-53-BD, CSB-35A-H/CSB-35A-HD, CSB-26A-C/CSB-26A-CD, CSB-1A-D/CSB-1A-DD, CSB-28A-C/CSB-28A-CD, CSB-30A-C/CSB-30A-CD, CSB-10A-C/CSB-10A-CD, and CSB-10A-

H/CSB-10A-HD were field duplicates. Results exhibited reasonable agreement, with the exception of the following:

Sample ID	Parameter	Concentration	RPD
R2SB-2A-A R2SB-2A-AD	Arsenic	4.6 mg/kg 7.8 mg/kg	51.61%
R2SB-52-A R2SB-52-AD	Arsenic	4.6 mg/kg 9.3 mg/kg	67.63 %
CSB-35A-H CSB-35A-HD	Lead	1520 mg/kg 413 mg/kg	114.54 %
CSB-35A-H CSB-35A-HD	Antimony	27 mg/kg 11 mg/kg	84.21 %
CSB-35A-H CSB-35A-HD	Cadmium	1.5 mg/kg 0.75 mg/kg	66.67 %
CSB-1A-D CSB-1A-DD	Antimony	2660 mg/kg 1650 mg/kg	46.87 %
CSB-1A-D CSB-1A-DD	Cadmium	1000 mg/kg 346 mg/kg	97.18 %
CSB-28A-C CSB-28A-CD	Lead	27 mg/kg 118 mg/kg	125.52 %
CSB-30A-C CSB-30A-CD	Antimony	7 mg/kg 4.6 mg/kg	41.38 %
CSB-10A-C CSB-10A-CD	Lead	256,000 mg/kg 169,000 mg/kg	40.94 %
CSB-10A-H CSB-10A-HD	Lead	101 mg/kg 42 mg/kg	82.52 %

Sample results were qualified as estimated (J).

9. Matrix Spike Analysis

The matrix spike (MS) percent recoveries were within the QC limits of 75-125 percent (soil/sediment matrices) and 80-120 percent (aqueous matrices), with the exception of the following:

Parameter	%R	MS or MSD	Associated Samples
Dissolved Arsenic	129% 131%	MS MSD	MW-9, MW-1, MW-2, MW-7S, MW-8S, MW-3, MW-3D, MW-5, MW-4, MW-6, EB1-121001, EB2-121101
Dissolved Selenium	133% 131%	MS MSD	

Parameter	%R	MS or MSD	Associated Samples
Total Lead	71%	MSD	R2SED-1C, R2SED-1D, R2SED-5D, R2SED-7C, R2SED-7D, R2SED-3C, R2SED-3D, R2SED-5C, R2SED-7CD, R2SED-9C, R2SED-9D, R2SB-51-A, R2SB-51-B
Total Arsenic	40% 57%	MS MSD	R2SB-4A-A, R2SB-4A-B, R2SB-4A-AD, R2SB-4A-C, R2SB-3A-A, R2SB-3A-C, R2SB-2A-A, R2SB-2A-B, R2SB-2A-C, R2SB-2A-AD, R2SB-1A-A, R2SB-1A-B, R2SB-1A-C, R2SB-1A-CD, R2SB-13A-A, R2SB-13A-B, R2SB-13A-C, R2SB-52-A, R2SB-52-B
Total Antimony	74%	MSD	CSB-1A-D, CSB-1A-E, CSB-1A-DD, CSB-38A-A, CSB-38A-B, CSB-38A-C, CSB-38A-D, CSB-13A-E, CSB-28A-E, CSB-10A-A, CSB-10A-B, CSB-10A-D, CSB-32A-A, CSB-32A-B, CSB-32A-C, CSB-10A-CD
Total Antimony	127%	MS	STRW-1

The associated sample results and reporting limits were qualified as estimated (J/UJ) when the %R was less than the lower QC limit. The associated sample results were qualified as estimated (J) when the %R exceeded the upper QC limit.

10. Laboratory Control Sample (LCS)

The laboratory control sample (LCS) percent recoveries were within the QC limits of 80-120 percent.

11. ICP Serial Dilution

All concentrations were either less than 50 times the instrument detection limit (IDL) or greater than 50 times the IDL with the percent differences that were ± 10 percent of the serial dilution result, with the exception of the following:

Sample ID	Parameter	Initial Conc	Serial Dilution Conc	IDL	%D	Associated Samples
MW-7S	Arsenic	30.106 mg/kg	23.304 mg/kg	0.11	22.59	MW-1, MW-2, MW-3, MW-3D, MW-4, MW-5, MW-6, MW-7S, MW-8S, MW-9, EB-1-121001, EB-2-121101
	Chromium	13.422 mg/kg	8.362 mg/kg	0.14	37.7	
	Selenium	6.451 mg/kg	11.989 mg/kg	0.19	85.84	

Sample ID	Parameter	Initial Conc	Serial Dilution Conc	IDL	%D	Associated Samples
R2SB-3A-C	Arsenic	6.339 mg/kg	8.23 mg/kg	0.1	29.83	R2SB-3A-C, R2SB-2A-A, R2SB-2A-B, R2SB-2A-C, R2SB-2A-AD, R2SB-1A-A, R2SB-1A-B, R2SB-1A-C, R2SB-1A-CD, R2SB-13A-A, R2SB-13A-B, R2SB-13A-C, R2SB-52-A, R2SB-52-B
CSB-38A-D	Lead	11.586 mg/kg	16.303 mg/kg	0.03	40.71	CSB-38A-D

Sample results were qualified as estimated (J).

DATA VALIDATION REPORT VALIDATION SUMMARY

SUMMARY

All the data is useable as qualified.

DATA QUALIFIERS

The following qualifiers were used to modify the data quality and usefulness of individual analytical results.

- U - The analyte was not detected at the given quantitation limit.
- J - The analyte was positively identified and detected; however, the concentration is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
- UJ - The analyte was not detected; the associated quantitation limit is an estimated value.
- D - The value was obtained from a reanalysis of a diluted sample.
- E - Concentration reported is estimated, the concentration exceeded the instrument's calibration range. The sample should be diluted.
- R - The value reported has been rejected.

DATA ASSESSMENT

Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory and not directly involved in the project.

This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgement the data are acceptable for use except where qualified with qualifiers which modify the usefulness of those individual values.

Jennifer M. Stanhoge
Quality Assurance Scientist

4/24/2002
Date

Jennifer M. Stanhoge
Quality Assurance Manager

4/24/2002
Date

RMC BEECHGROVE

Page 1 of 2

4th Quarter 2001 Groundwater, 12/10 - 12/11/2001

Trimatrix# 35132-32 Project# 98-478-04

Sample Location		MW-9			MW-1			MW-2			EB-1-121001			MW-7S			MW-8S			MW-3		
Lab ID		295087			295088			295089			295090			295091			295092			295093		
Sample Date		12/10/2001			12/10/2001			12/10/2001			12/10/2001			12/11/2001			12/11/2001			12/11/2001		
Matrix		Groundwater			Groundwater			Groundwater			Aqueous			Groundwater			Groundwater			Groundwater		
Remarks											Equipment Blank											
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																						
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	4		1	27		1	12		1		U	1	26		1	13		1	11		1
Barium	ug/L	68		10	93		10	48		10		U	10	25		10	123		10	98		10
Cadmium	ug/L		U	0.2		U	0.2	0.4		0.2		U	0.2		U	0.2	0.4		0.2		U	0.2
Chromium	ug/L	2.2		1	4		1	4.8		1		U	1	2.8		1		U	1		U	1
Lead	ug/L		U	1	3.4		1	84		1		U	1	47		1	23		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2	4		2	3.1		2		U	2	5.7		2		U	2	3.7		2
Silver	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Dissolved Metals																						
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	3.7	J	1	22	J	1	9.8	J	1		UJ	1	30	J	1	14	J	1	8.4	J	1
Barium	ug/L	68		10	85		10	25		10		U	10	23		10	135		10	113		10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2	0.3		0.2		U	0.2
Chromium	ug/L	3.8	J	1	8.9	J	1	6.8	J	1		UJ	1	13	J	1	3.8	J	1	6.6	J	1
Lead	ug/L		U	1		U	1	6.2		1		U	1	2.5		1	11		1		U	1
Selenium	ug/L		UJ	2	4.9	J	2	3.7	J	2		UJ	2	6.5	J	2		UJ	2	3.7	J	2

RMC BEECHGROVE
4th Quarter 2001 Groundwater, 12/10 - 12/11/2001
Trimatrix# 35132-32 Project# 98-478-04

Sample Location		MW-3D			MW-5			MW-4			MW-6			EB-2-121101		
Lab ID		295094			295095			295096			295097			295098		
Sample Date		12/11/2001			12/11/2001			12/11/2001			12/11/2001			12/11/2001		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Aqueous		
Remarks		FD of MW-3												Equipment Blank		
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	11		1	5.4		1		U	1	2.2		1		U	1
Barium	ug/L	102		10	150		10	187		10	79		10		U	10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L		U	1		U	1		U	1		U	1		U	1
Lead	ug/L		U	1	2.1		1	1.5		1	1.3		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L	2.7		2		U	2		U	2		U	2		U	2
Silver	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Dissolved Metals																
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	8.8	J	1	3.7	J	1		UJ	1	1.4	J	1		UJ	1
Barium	ug/L	123		10	170		10	203		10	89		10		U	10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L	7.1	J	1	4	J	1	3.4	J	1	3.8	J	1		UJ	1
Lead	ug/L		U	1		U	1		U	1		U	1		U	1
Selenium	ug/L	4.5	J	2		UJ	2		UJ	2		UJ	2		UJ	2

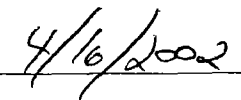
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4/16/2002

RMC BEECHGROVE
Sediment Sampling, 12/12/2001
Trimatrix# 35132-32 Project# 98-478-04

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	RL
R2SED-1C	295099	12/12/2001	Sediment		Arsenic	mg/kg	10		1
R2SED-1D	295100	12/12/2001	Sediment		Arsenic	mg/kg	5.5		1
R2SED-3C	295101	12/12/2001	Sediment		Arsenic	mg/kg	13		1
R2SED-3D	295102	12/12/2001	Sediment		Arsenic	mg/kg	12		1
R2SED-5C	295103	12/12/2001	Sediment		Arsenic	mg/kg	5.7		1
R2SED-5D	295104	12/12/2001	Sediment		Arsenic	mg/kg	7.3		1
EB-3-121201	295105	12/12/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SED-7C	295106	12/12/2001	Sediment		Arsenic	mg/kg	13		1
R2SED-7D	295107	12/12/2001	Sediment		Arsenic	mg/kg	9.2		1
R2SED-7CD	295108	12/12/2001	Sediment	FD of R2SED-7C	Arsenic	mg/kg	10		1
R2SED-9C	295109	12/12/2001	Sediment		Arsenic	mg/kg	8.9		1
R2SED-9D	295110	12/12/2001	Sediment		Arsenic	mg/kg	8.2		1
R2SB-51-A	295111	12/12/2001	Sediment		Arsenic	mg/kg	6.6		1
R2SB-51-B	295112	12/12/2001	Sediment		Arsenic	mg/kg	7		1
R2SED-1C	295099	12/12/2001	Sediment		Lead	mg/kg	19	J	0.6
R2SED-1D	295100	12/12/2001	Sediment		Lead	mg/kg	62	J	0.6
R2SED-3C	295101	12/12/2001	Sediment		Lead	mg/kg	622	J	13
R2SED-3D	295102	12/12/2001	Sediment		Lead	mg/kg	691	J	13
R2SED-5C	295103	12/12/2001	Sediment		Lead	mg/kg	73	J	1.3
R2SED-5D	295104	12/12/2001	Sediment		Lead	mg/kg	20	J	0.6
EB-3-121201	295105	12/12/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SED-7C	295106	12/12/2001	Sediment		Lead	mg/kg	61	J	0.6
R2SED-7D	295107	12/12/2001	Sediment		Lead	mg/kg	27	J	0.6
R2SED-7CD	295108	12/12/2001	Sediment	FD of R2SED-7C	Lead	mg/kg	57	J	0.6
R2SED-9C	295109	12/12/2001	Sediment		Lead	mg/kg	25	J	0.6
R2SED-9D	295110	12/12/2001	Sediment		Lead	mg/kg	39	J	0.6
R2SB-51-A	295111	12/12/2001	Sediment		Lead	mg/kg	285	J	6.3
R2SB-51-B	295112	12/12/2001	Sediment		Lead	mg/kg	199	J	6.3





RMC BEECHGROVE
Sediment Sampling, 12/13/2001
Trimatrix# 351132-33 Project# 98-478-04

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	RL
R2SB-4A-A	295447	12/13/2001	Sediment		Arsenic	mg/kg	28	J	1
EB-1-121301	295448	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SB-4A-B	295449	12/13/2001	Sediment		Arsenic	mg/kg	13	J	1
R2SB-4A-AD	295450	12/13/2001	Sediment	FD of R2SB-4A-A	Arsenic	mg/kg	26	J	1
R2SB-4A-C	295451	12/13/2001	Sediment		Arsenic	mg/kg	18	J	1
R2SB-3A-A	295452	12/13/2001	Sediment		Arsenic	mg/kg	36	J	1
R2SB-3A-B	295453	12/13/2001	Sediment		Arsenic	mg/kg	19		3.1
R2SB-3A-C	295454	12/13/2001	Sediment		Arsenic	mg/kg	6.3	J	1
EB-2-121301	295455	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SB-2A-A	295456	12/13/2001	Sediment		Arsenic	mg/kg	16	J	1
R2SB-2A-B	295457	12/13/2001	Sediment		Arsenic	mg/kg	15	J	1
R2SB-2A-C	295458	12/13/2001	Sediment		Arsenic	mg/kg	4.6	J	1
R2SB-2A-AD	295459	12/13/2001	Sediment	FD of R2SB-2A-A	Arsenic	mg/kg	7.8	J	1
EB-3-121301	295460	12/13/2001	Sediment		Arsenic	ug/L		U	1
R2SB-1A-A	295461	12/13/2001	Sediment		Arsenic	mg/kg	58	J	1
R2SB-1A-B	295462	12/13/2001	Sediment		Arsenic	mg/kg	7.6	J	1
R2SB-1A-C	295463	12/13/2001	Sediment		Arsenic	mg/kg	7.8	J	1
R2SB-1A-CD	295464	12/13/2001	Sediment	FD of R2SB-1A-C	Arsenic	mg/kg	8.3	J	1
R2SB-13A-A	295465	12/13/2001	Sediment		Arsenic	mg/kg	14	J	1
R2SB-13A-B	295466	12/13/2001	Sediment		Arsenic	mg/kg	2.1	J	1
R2SB-13A-C	295467	12/13/2001	Sediment		Arsenic	mg/kg	4.5	J	1
R2SB-52-A	295468	12/13/2001	Sediment		Arsenic	mg/kg	4.6	J	1
R2SB-52-B	295469	12/13/2001	Sediment		Arsenic	mg/kg	3.3	J	1
EB-5-121301	295470	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SB-52-AD	295471	12/13/2001	Sediment	FD of R2SB-52-A	Arsenic	mg/kg	9.3	J	1
R2SB-53-A	295472	12/13/2001	Sediment		Arsenic	mg/kg	8.4	J	1
R2SB-53-B	295473	12/13/2001	Sediment		Arsenic	mg/kg	3.3	J	1
R2SB-53-BD	295474	12/13/2001	Sediment	FD of R2SB-53-B	Arsenic	mg/kg	3	J	1
EB-6-121301	295475	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1

RMC BEECHGROVE
Soil Sampling, 12/14/2001
Trimatrix# 351132-33 Project# 98-478-04

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Units	Arsenic			Lead			Antimony			Cadmium		
						Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
CSB-13A-A	295508	12/14/2001	Soil		mg/kg	11		1	2,300		63	80		5	64		1.3
CSB-13A-B	295509	12/14/2001	Soil		mg/kg	22		1	1,070		13	197		5	29		0.5
CSB-13A-C	295510	12/14/2001	Soil		mg/kg	6.6		1	75		1.3	5		1	36		0.5
CSB-13A-D	295511	12/14/2001	Soil		mg/kg	5.9		1	39		0.6	1.9		1	1.7		0.5
CSB-13A-E	295512	12/14/2001	Soil		mg/kg	6		1	27		0.6	2.9	J	1	0.99		0.5
EB-7-121401	295513	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-28A-A	295514	12/14/2001	Soil		mg/kg	53		1	30		0.6	5		1	17		0.5
CSB-28A-B	295515	12/14/2001	Soil		mg/kg	5.1		1	13		0.6		U	1		U	0.5
CSB-28A-C	295516	12/14/2001	Soil		mg/kg	7.9		1	27	J	0.6		U	1		U	0.5
CSB-28A-D	295517	12/14/2001	Soil		mg/kg	6.5		1	14		0.6		U	1		U	0.5
CSB-28A-E	295518	12/14/2001	Soil		mg/kg	9.4		1	16		0.6		UJ	1		U	0.5
CSB-28A-CD	295519	12/14/2001	Soil	FD of CSB-28A-C	mg/kg	9.1		1	118	J	6.3	3		1		U	0.5
CSB-30A-A	295520	12/14/2001	Soil		mg/kg	30	J	1	2,360		63	63		2.5	4.2		0.5
CSB-30A-B	295521	12/14/2001	Soil		mg/kg	13	J	1	366		6.3	14		1	1.3		0.5
EB-8-121401	295522	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-30A-C	295523	12/14/2001	Soil		mg/kg	9.1	J	1	243		6.3	7	J	1	0.83		0.5
CSB-30A-D	295524	12/14/2001	Soil		mg/kg	6.6	J	1	32		0.6	1.2		1		U	0.5
CSB-30A-E	295525	12/14/2001	Soil		mg/kg	6.6	J	1	13	U	0.6		U	1		U	0.5
CSB-10A-A	295526	12/14/2001	Soil		mg/kg	4.5		1	1,780		63	5.7	J	1	0.59		0.5
CSB-10A-B	295527	12/14/2001	Soil		mg/kg	6.1		1	1,210		32	31	J	1	1.3		0.5
CSB-10A-C	295528	12/14/2001	Soil		mg/kg	433		6.25	256,000	J	6,250	1,720		50	132		0.625
EB-9-121401	295529	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-30A-CD	295530	12/14/2001	Soil	FD of CSB-30A-C	mg/kg	9.5	J	1	228		3.2	4.6	J	1	0.71		0.5
CSB-10A-D	295531	12/14/2001	Soil		mg/kg	2,730		63	475,000		12,500	4,260	J	100	527		6.3
CSB-10A-E	295532	12/14/2001	Soil		mg/kg	7.1	J	1	253		6.3	6.7		1	0.61		0.5
CSB-32A-A	295533	12/14/2001	Soil		mg/kg	394		6.3	164,000		6,250	2,190	J	100	158		6.3
CSB-32A-B	295534	12/14/2001	Soil		mg/kg	199		3.2	90,100		3,130	1,060	J	50	47		3.2
CSB-32A-C	295535	12/14/2001	Soil		mg/kg	230		3.2	64,000		6,250	1,010	J	25	38		3.2
CSB-32A-D	295536	12/14/2001	Soil		mg/kg	8	J	1	40		0.6	2.7		1		U	0.5
CSB-32A-E	295537	12/14/2001	Soil		mg/kg	6.5	J	1	20	U	0.6	1.5		1		U	0.5
CSB-10A-CD	295538	12/14/2001	Soil	FD of CSB-10A-C	mg/kg	313		6.3	169,000	J	6,250	1,520	J	50	112		6.3
STRW-1-121401	295539	12/14/2001	SW		ug/L	4.7	J	1	811		25	46	J	10	11		0.2

[Signature]

4/16/2022

RMC - BEECHGROVE
Soil Sampling, 12/14/2002
Trimatrix# 35132-34 Project# 98-478-05

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Units	Antimony			Arsenic			Cadmium			Lead		
						Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
CSB-1A-F	297370	12/14/2001	Soil		mg/kg	1.7		1	8.5		1	2		0.5	170		2.5
CSB-1A-G	297371	12/14/2001	Soil		mg/kg	1.6		1	5.6		1		U	0.5	65		1
CSB-1A-H	297372	12/14/2001	Soil		mg/kg	2		1	6		1		U	0.5	82		1
CSB-1A-I	297373	12/14/2001	Soil		mg/kg	1.4		1	5.7		1		U	0.5	47		0.6
CSB-1A-J	297374	12/14/2001	Soil		mg/kg	3.6		1	5.7		1		U	0.5	144		2.5
CSB-10A-F	297375	12/14/2001	Soil		mg/kg	2,960		50	1,700		50	363		5	288,000		5,000
CSB-10A-G	297376	12/14/2001	Soil		mg/kg	12		1	28		1	7.2		0.5	1090		25
CSB-10A-H	297377	12/14/2001	Soil		mg/kg	1.8		1	11		1	5.1		0.5	101	J	2.5
CSB-10A-HD	297378	12/14/2001	Soil	FD of CSB-10A-H	mg/kg	1.6		1	14		1	4.7		0.5	42	J	0.6
CSB-10A-I	297379	12/14/2001	Soil		mg/kg	6.1		1	44		1	20		0.5	365		5

INORGANIC DATA VALIDATION SUMMARY

Site Name: RMC Beech Grove
 Project Number: 98-478-05
 Sampling Date(s): 12/10-14/2001

Laboratory: Trimatrix
 Case /Order No.: 35132-32+33

Compound List: ☐ TAL ☐ Priority Pollutant ☐ Appendix IX ☒ Other various
 Method: ☐ CLP SOW ILM04 ☐ 40 CFR 136 ☒ SW-846 Method 6010/7000 series ☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			
Initial Calibrations	✓			
Continuing Calibrations	✓			
CRDL Standards	✓			
Blank Analysis Results		✓	✓	Sample conc < 10x Prep Blank conc.
ICP Interference Check Sample Recoveries	✓			
Duplicate Results		✓	✓	gms
Field Duplicate Results (see below)			✓	MW-3 R2SB-7 R2SB-4A-A MW-3D R2SB-7D R2SB-4A-A
Spike Analysis Recoveries			✓	Sample conc < 4x spike added
Serial Dilution Results			✓	%D > 10% and conc > 50xIDL
Laboratory Control Sample Results	✓			
Furnace AA QC Analysis	✓			
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments: Field Duplicates continued:

R2SB-2A-A	R2SB-1A-C	R2SB-52-A	R2SB-53-B	CSB-35A-W
R2SB-2A-AD	R2SB-1A-CD	R2SB-52-AD	R2SB-53BD	CSB-35A-HD
CSB-26A-C	CSB-1A-D	CSB-28A-C	CSB-30A-C	CSB-10A-C
CSB-26A-CD	CSB-1A-DD	CSB-28A-CD	CSB-30A-CD	CSB-10A-CD

Accept - No qualification required.

FYI - For your information only, no qualification necessary.

Qualify - Qualify as rejected, estimated or biased

NA - Not applicable.

NR - Not reviewed.

QA Scientist Jennifer M. Stawhage
 Date 3/28/2002

Blank Contamination

Blank ID	Parameter	Conc	Units	Associated Samples	% Solids	Weight	Volume	DF	BC	BC * 5 or *10	Sample Conc	Q
Method Blank 71626	Lead	2.2	mg/kg	R2SB-53-A						22	499	
				R2SB-53-B						22	58	
				R2SB-53-BD						22	52	
				CSB-30A-A						22	2360	
				CSB-30A-B						22	366	
				CSB-30A-C						22	243	
				CSB-30A-D						22	32	
				CSB-30A-E						22	13	*
				CSB-30A-CD						22	228	
				CSB-10A-E						22	253	
				CSB-32A-D						22	40	
				CSB-32A-E						22	20	*
				CSB-10A-A						22	1780	
				CSB-10A-B						22	1210	
				CSB-10A-D						22	475000	
				CSB-32A-A						22	164000	
				CSB-32A-B						22	90100	
				CSB-32A-C						22	64000	
				CSB-10A-CD						22	169000	
				CSB-10A-C						22	256000	
EB-6-121301	Lead	2.6	µg/L	R2SB-52-AD	1	0.4005	0.05	50	16.2	81	338	
				R2SB-53-A	1	0.3995	0.05	50	16.3	81	499	
				R2SB-53-B	1	0.4005	0.05	5	1.6	8	58	
				R2SB-53-BD	1	0.4003	0.05	5	1.6	8	52	
EB-1-121401	Lead	1.4	µg/L	CSB-35A-A	1	0.9997	0.1	10000	1400.4	7002	70,400	
				CSB-35A-B	1	0.9997	0.1	50	7.0	35	279	
				CSB-35A-C	1	0.9997	0.1	50000	7002.1	35011	350,000	
				CSB-35A-D	1	1.0001	0.1	50	7.0	35	285	
				CSB-35A-E	1	0.9998	0.1	100	14.0	70	499	
				CSB-35A-F	1	1.0005	0.1	10	1.4	7	69	
				CSB-35A-G	1	1.0005	0.1	25	3.5	17	156	
				CSB-35A-H	1	1.0005	0.1	250	35.0	175	1,520	
				CSB-35A-I	1	0.9998	0.1	5	0.7	4	11	
				CSB-35A-J	1	1.0003	0.1	5	0.7	3	11	
				CSB-35A-HD	1	0.9995	0.1	100	14.0	70	413	
				CSB-26A-A	1	1.0005	0.1	25	3.5	17	174	
				CSB-26A-B	1	1.0005	0.1	10	1.4	7	88	
				CSB-26A-C	1	1.0005	0.1	5	0.7	3	40	
				CSB-26A-D	1	1.0005	0.1	5	0.7	3	25	
				CSB-26A-E	1	1	0.1	5	0.7	4	23	
EB-2-121401	Lead	2.1	µg/L	CSB-35A-A	1	0.9997	0.1	10000	2100.6	10503	70,400	
				CSB-35A-B	1	0.9997	0.1	50	10.5	53	279	
				CSB-35A-C	1	0.9997	0.1	50000	10503.2	52516	350,000	
				CSB-35A-D	1	1.0001	0.1	50	10.5	52	285	
				CSB-35A-E	1	0.9998	0.1	100	21.0	105	499	
				CSB-35A-F	1	1.0005	0.1	10	2.1	10	69	
				CSB-35A-G	1	1.0005	0.1	25	5.2	26	156	
				CSB-35A-H	1	1.0005	0.1	250	52.5	262	1,520	
				CSB-35A-I	1	0.9998	0.1	5	1.1	5	11	
				CSB-35A-J	1	1.0003	0.1	5	1.0	5	11	
				CSB-35A-HD	1	0.9995	0.1	100	21.0	105	413	
				CSB-26A-A	1	1.0005	0.1	25	5.2	26	174	
				CSB-26A-B	1	1.0005	0.1	10	2.1	10	88	
				CSB-26A-C	1	1.0005	0.1	5	1.0	5	40	
				CSB-26A-D	1	1.0005	0.1	5	1.0	5	25	
				CSB-26A-E	1	1	0.1	5	1.1	5	23	

* - Sample concentration less than 5 or 10 times blank concentration, qualified as "U" Undetected.

AWD
4/4/2002



QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No. 35132 -33
Instrument ID 114

Parameter Lead, Total
Ref. Cit. USEPA-6020
Matrix SOIL
Units mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
71626	Method Preparation	1	2.2
71647	Method Preparation	1	<0.60

Associated Samples

R2SB-53-A
R2SB-53-B
R2SB-53-BD
CSB-30A-A
CSB-30A-B
CSB-30A-C
CSB-30A-D
CSB-30A-E
CSB-30A-CD

CSB-10A-E
CSB-32A-D
CSB-32A-E
CSB-10A-A
CSB-10A-B
CSB-10A-D
CSB-32A-A
CSB-32A-B
CSB-32A-C
CSB-10A-CD

CSB-10A-C

JMS
3/28/2002

000275

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -32
Sample ID. MW-7SMS/MSD

Matrix WATER
Lab Sample No. 295091
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Dissolved	70 - 138	287.2	<10	250	115	MS
Antimony, Dissolved	70 - 138	296.6	<10	250	119	MS
Antimony, Total	70 - 138	58.3	<10	50	117	MS
Antimony, Total	70 - 138	57.7	<10	50	115	MS
Arsenic, Dissolved	59 - 164	353.4	30	250	129	MS *
Arsenic, Dissolved	59 - 164	357.4	30	250	131	MS *
Arsenic, Total	59 - 164	76.6	26	50	101	MS
Arsenic, Total	59 - 164	75.5	26	50	99	MS
Barium, Dissolved	53 - 142	279.2	23	250	102	MS
Barium, Dissolved	53 - 142	276.4	23	250	101	MS
Barium, Total	53 - 142	70.0	25	50	90	MS
Barium, Total	53 - 142	70.4	25	50	91	MS
Cadmium, Dissolved	74 - 127	265.5	<0.2	250	106	MS
Cadmium, Dissolved	74 - 127	263.3	<0.2	250	105	MS
Cadmium, Total	74 - 127	48.6	<0.2	50	97	MS
Cadmium, Total	74 - 127	48.0	<0.2	50	96	MS
Chromium, Dissolved	76 - 127	283.4	13	250	108	MS
Chromium, Dissolved	76 - 127	276.8	13	250	106	MS
Chromium, Total	76 - 127	49.3	2.8	50	93	MS
Chromium, Total	76 - 127	49.3	2.8	50	93	MS
Lead, Dissolved	75 - 134	256.6	2.5	250	102	MS
Lead, Dissolved	75 - 134	255.3	2.5	250	101	MS
Lead, Total	75 - 134	95.3	47	50	97	MS
Lead, Total	75 - 134	95.4	47	50	97	MS
Mercury, Total	59 - 158	2.74	<0.2	2.5	110	CV
Mercury, Total	59 - 158	2.43	<0.2	2.5	97	CV
Selenium, Dissolved	59 - 155	338.5	6.5	250	133	MS *
Selenium, Dissolved	59 - 155	334.6	6.5	250	131	MS *
Selenium, Total	59 - 155	56.1	5.7	50	101	MS
Selenium, Total	59 - 155	55.1	5.7	50	99	MS
Silver, Total	69 - 128	43.8	<0.2	50	88	MS
Silver, Total	69 - 128	43.8	<0.2	50	88	MS

* Associated Samples

MW-9 MW-3
MW-1 MW-3D
MW-2 MW-5
EB1-121001 MW-4
MW-73 MW-6
MW-85 EB2-121001

gms
3/28/2002

000286

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -32
Sample ID. R2SED-9DMS/MSD

Matrix SOIL
Lab Sample No. 295110
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	36.9	8.2	31.2	92	MS
Arsenic, Total	60 - 141	35.9	8.2	31.2	89	MS
Lead, Total	74 - 132	64.7	39	31.2	82	MS
Lead, Total	74 - 132	61.1	39	31.2	71	MS

R2SED-1C	R2SED-5C
R2SED-1D	R2SED-7CD
R2SED-5D	R2SED-9C
R2SED-7C	R2SED-9D
R2SED-7D	R2SB-S1-A
R2SED-3C	R2SB-S1-B
R2SED-3D	

ms
3/28/02

000288

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -33

Matrix

SOIL

Sample ID. R2SB-3A-CMS/MSD

Lab Sample No.

295454

Units

mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	18.8	6.3	31.2	40	MS
Arsenic, Total	60 - 141	24.2	6.3	31.2	57	MS

R2SB-4A-A	R2SB-1A-A
R2SB-4A-B	R2SB-1A-B
R2SB-4A-AD	R2SB-1A-C
R2SB-4A-C	R2SB-1A-CD
R2SB-3A-A	R2SB-13A-A
R2SB-3A-C	R2SB-13A-B
R2SB-2A-A	R2SB-13A-C
R2SB-2A-B	R2SB-52-A
R2SB-2A-C	R2SB-52-B
R2SB-2A-AD	

ms
3/28/2002

000289

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -33 Matrix SOIL
Lab Sample No. 295472
Sample ID. R2SB-53-AMS/MSD Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	30.4	8.4	31.2	71	MS
Arsenic, Total	60 - 141	29.1	8.4	31.2	66	MS

R2SB-53-A
R2SB-53-B
R2SB-53-BD
CSB-30A-A
CSB-30A-B
CSB-30A-C
CSB-30A-D
CSB-30A-E

CSB-30A-C
CSB-10A-E
CSB-32A-D
CSB-32A-E

Jms
3/28/92

000290

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -33

Matrix

SOIL

Lab Sample No.

295506

Sample ID. CSB-38A-DMS/MSD

Units

mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Total	68 - 126	19.3	<1.0	25	77	MS
Antimony, Total	68 - 126	18.4	<1.0	25	74	MS
Arsenic, Total	60 - 141	33.7	2.5	31.2	100	MS
Arsenic, Total	60 - 141	27.4	2.5	31.2	80	MS
Cadmium, Total	65 - 134	30.0	<0.50	31.2	96	MS
Cadmium, Total	65 - 134	29.1	<0.50	31.2	93	MS
Lead, Total	74 - 132	46.2	12	31.2	110	MS
Lead, Total	74 - 132	50.3	12	31.2	123	MS

CSB-1A-D

CSB-28A-E

CSB-1A-E

CSB-10A-A

CSB-1A-DD

CSB-10A-B

CSB-38A-A

CSB-10A-D

CSB-38A-B

CSB-32A-A

CSB-38A-C

CSB-32A-B

CSB-38A-D

CSB-32A-C

CSB-13A-E

CSB-10A-CD

JMS
3/28/2002

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -33
Sample ID. STRW-1121401

Matrix WATER
Lab Sample No. 295539
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Total	70 - 138	109.3	46	50	127	MS
Antimony, Total	70 - 138	91.7	46	50	91	MS
Arsenic, Total	59 - 164	54.3	4.7	50	99	MS
Arsenic, Total	59 - 164	54.6	4.7	50	100	MS
Cadmium, Total	74 - 127	60.2	11	50	98	MS
Cadmium, Total	74 - 127	58.5	11	50	95	MS

STRW-1

gms
3/28/2002
000294

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -33
Sample ID. R2SB-3A-CMS/MSD

Matrix
Lab Sample No. 295454
Units mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD M
Arsenic, Total	0 - 20	18.8	24.2	(25) MS OK < 35

R2SB-4A-A
R2SB-4A-B
R2SB-4A-AD
R2SB-4A-C
R2SB-3A-A
R2SB-3A-C
R2SB-2A-A
R2SB-2A-B
R2SB-2A-C

R2SB-2A-AD
R2SB-1A-A
R2SB-1A-B
R2SB-1A-C
R2SB-1A-CD
R2SB-13A-A
R2SB-13A-B
R2SB-13A-C
R2SB-52-A
R2SB-52-B

Jms
3/28/2002

000298

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -33
Sample ID. CSB-38A-DMS/MSD

Matrix
Lab Sample No. 295506
Units SOIL
mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Antimony, Total	0 - 20	19.3	18.4	5	MS
Arsenic, Total	0 - 20	27.4	33.7	21	MS OK < 35
Cadmium, Total	0 - 20	30.0	29.1	3	MS
Lead, Total	0 - 20	50.3	46.2	8	MS

CSB-1A-D	CSB-28A-E
CSB-1A-E	CSB-10A-A
CSB-1A-DD	CSB-10A-B
CSB-38A-A	CSB-10A-D
CSB-38A-B	CSB-32A-A
CSB-38A-C	CSB-32A-B
CSB-38A-D	CSB-32A-C
CSB-13A-E	CSB-10A-CD

JMS
3/28/2002

000301

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -33
Sample ID. CSB-32A-DMS/MSD

Matrix
Lab Sample No. 295536
Units mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Antimony, Total	0 - 20	25.6	24.6	4	MS
Arsenic, Total	0 - 20	32.9	37.0	12	MS
Cadmium, Total	0 - 20	25.6	31.9	22	MS OK <35
Lead, Total	0 - 20	65.0	66.8	3	MS

CSB-30A-A
CSB-30A-B
CSB-30A-C
CSB-30A-D
CSB-30A-E
CSB-30A-CD
CSB-10A-E

CSB-32A-D
CSB-32A-E

gmd
3/28/2002

000302

Site Name: RMC Beech Grove
 Project Number: 98-478-04

Laboratory: Trimatrix

Field Duplicates

Sample ID	Analyte	Units	Result	RPD	Qualifier
MW-3 MW-3D	Total Arsenic	µg/L	11	0.00	
		µg/L	11		
	Total Barium	µg/L	98	4.00	
		µg/L	102		
	Total Selenium	µg/L	3.7	31.25	
		µg/L	2.7		
	Dissolved Arsenic	µg/L	8.4	4.65	
		µg/L	8.8		
	Dissolved Barium	µg/L	113	8.47	
		µg/L	123		
	Dissolved Chromium	µg/L	6.6	7.30	
		µg/L	7.1		
	Dissolved Selenium	µg/L	3.7	19.51	
		µg/L	4.5		
R2SED-7C R2SED-7D	Arsenic	mg/kg	13	26.09	
		mg/kg	10		
	Lead	mg/kg	61	6.78	
		mg/kg	57		
R2SB-4A-A R2SB-4A-AD	Arsenic	mg/kg	28	7.41	
		mg/kg	26		
	Lead	mg/kg	2490	7.07	
		mg/kg	2320		
R2SB-2A-A R2SB-2A-AD	Arsenic	mg/kg	4.6	51.61	*
		mg/kg	7.8		
	Lead	mg/kg	816	19.87	
		mg/kg	996		
R2SB-1A-C R2SB-1A-CD	Arsenic	mg/kg	7.6	2.60	
		mg/kg	7.8		
	Lead	mg/kg	4230	16.88	
		mg/kg	5010		
R2SB-52-A R2SB-52-AD	Arsenic	mg/kg	4.6	67.63	*
		mg/kg	9.3		
	Lead	mg/kg	3.3	9.52	
		mg/kg	3		
R2SB-53-B R2SB-53-BD	Arsenic	mg/kg	300	11.91	
		mg/kg	338		
	Lead	mg/kg	58	10.91	
		mg/kg	52		
CSB-35A-H CSB-35A-HD	Arsenic	mg/kg	8.1	21.92	
		mg/kg	6.5		
	Lead	mg/kg	1520	114.54	*
		mg/kg	413		
	Antimony	mg/kg	27	84.21	*
		mg/kg	11		
	Cadmium	mg/kg	1.5	66.67	*
		mg/kg	0.75		
CSB-26A-C CSB-26A-CD	Arsenic	mg/kg	6.4	15.13	
		mg/kg	5.5		
	Lead	mg/kg	40	28.57	
		mg/kg	30		
	Antimony	mg/kg	1	40.00	
		mg/kg	1.5		
CSB-1A-D CSB-1A-DD	Arsenic	mg/kg	989	18.56	
		mg/kg	821		
	Lead	mg/kg	249000	29.49	
		mg/kg	185000		
	Antimony	mg/kg	2660	46.87	*
		mg/kg	1650		

$2 \times RL(2) = 4$, Diff = 1

ms
3/28/2002

Site Name: RMC Beech Grove
Project Number: 98-478-04

Laboratory: Trimatrix

Field Duplicates

Sample ID	Analyte	Units	Result	RPD	Qualifier
	Cadmium	mg/kg	1000	97.18	*
		mg/kg	346		
CSB-28A-C CSB-28A-CD	Arsenic	mg/kg	7.9	14.12	
		mg/kg	9.1		
	Lead	mg/kg	27	125.52	
		mg/kg	118		
CSB-30A-C CSB-30A-CD	Arsenic	mg/kg	9.1	4.30	
		mg/kg	9.5		
	Lead	mg/kg	243	6.37	
		mg/kg	228		
	Antimony	mg/kg	7	41.38	
		mg/kg	4.6		
	Cadmium	mg/kg	0.83	15.58	
		mg/kg	0.71		
CSB-10A-C CSB-10A-CD	Arsenic	mg/kg	433	32.17	
		mg/kg	313		
	Lead	mg/kg	256000	40.94	
		mg/kg	169000		
	Antimony	mg/kg	1720	12.35	
		mg/kg	1520		
	Cadmium	mg/kg	132	16.39	
		mg/kg	112		

Duplicate Criteria: Aqueous matrices <30 % RPD; Soil/Solid matrices <40 %RPD.

* - Denotes %RPD outside criteria.

NA - Duplicate relative percent difference cannot be calculated.

ND - Not detected.

ms
3/28/2002

RMC Beech Grove
SERIAL DILUTIONS
Groundwater Samples

Run Date	T or D	Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	Associated Samples
1/8/2002	D	As	295091	MW-7S	30.106	23.304	22.59	0.11	5.25	* MW-1, MW-2, MW-3, MW-3D, MW-4, MW-5, MW-6, MW-7S, MW-8S, MW-9, EB 1-121001, EB-2-121101
		Ba			23.354	22.860	2.12	0.19	9.60	
		Cd			U	U	nc	0.01	0.50	
		Cr			13.422	8.362	37.70	0.14	6.90	
		Se			6.451	11.989	85.84	0.19	9.70	
		Pb			2.518	2.271	9.81	0.03	1.50	
1/8/2002	T	Ba	295093	MW-3	97.860	100.528	2.73	0.20	10.00	MW-3
12/16/2001	T	Sb	295091	MW-7S	U	U	nc	0.03	1.65	MW-1, MW-2, MW-3, MW-3D, MW-4, MW-5, MW-6, MW-7S, MW-8S, MW-9, EB 1-121001, EB-2-121101

* Associated sample results were qualified because %D >10% and Initial and Serial Dilution Concs >IDL*50

2002/01/03 JMD

RMC Beech Grove
SERIAL DILUTIONS
Soil/Sediment Samples

Run Date	Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50
1/2/2002	Sb	295539	STRW-1-121401	46.255	48.039	3.86	0.06	3.05
1/3/2002	As	295472	R2SB-53-A	8.357	8.695	4.05	0.10	4.85
1/3/2002	Sb	295536	CSB-32A-D	2.719	2.879	5.89	0.06	3.05
1/3/2002	As	295536	CSB-32A-D	8.043	8.206	2.03	0.10	4.85
1/3/2002	Cd	295536	CSB-32A-D	U	U	nc	0.03	1.4
1/4/2002	Pb	295110	R2SED-9D	38.823	37.476	3.47	0.03	1.45
1/4/2002	As	295454	R2SB-3A-C	6.339	8.230	29.83	0.10	4.85
1/4/2002	Pb	295506	CSB-38A-D	20.286	21.029	3.66	0.03	1.45
1/7/2002	As	295492	CSB-26A-D	6.220	6.248	0.45	0.10	4.85
1/7/2002	Cd	295492	CSB-26A-D	0.538	0.532	1.01	0.03	1.4
1/7/2002	Pb	295492	CSB-26A-D	24.913	25.142	0.92	0.03	1.5
1/7/2002	Sb	295492	CSB-26A-D	U	U	nc	0.06	3.05
1/7/2002	Pb	295506	CSB-38A-D	11.586	16.303	40.71	0.03	1.5
1/7/2002	Sb	295506	CSB-38A-D	U	U	nc	0.06	3.05
1/7/2002	Pb	295536	CSB-32A-D	39.695	42.511	7.09	0.03	1.5
1/7/2002	As	295539	STRW-1-121401	4.739	4.622	2.47	0.11	5.25
1/7/2002	Cd	295539	STRW-1-121401	10.543	11.527	9.33	0.01	0.5

* Associated sample results were qualified because %D >10% and Initial and Serial Dilution Concs >IDL*50

Associated samples for 295454 are 295454, 295456, 295457, 295458, 295459, 295461, 295462, 295463, 295464, 295465, 295466, 295467, 295468, 295469.

Associated samples for 295506 is 295506.

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-9	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295087

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	4.0		MS	ug/L
7440-39-3	Barium, Total	68		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7440-47-3	Chromium, Total	2.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2		MS	ug/L
7440-36-0	Antimony, Dissolved	<10		MS	ug/L
7440-38-2	Arsenic, Dissolved	3.7 J		MS	ug/L
7440-39-3	Barium, Dissolved	68		MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2		MS	ug/L
7440-47-3	Chromium, Dissolved	3.8 J		MS	ug/L
7439-92-1	Lead, Dissolved	<1.0		MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 US		MS	ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/10/01
Time Sampled:	13:15
Date Received:	12/13/01
Time Received:	09:00

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		MW-1	Data Qualifiers			Units
			C	Q	M	
	Lab Sample No:	295088				
7440-36-0	Antimony, Total	<10				MS ug/L
7440-38-2	Arsenic, Total	27				MS ug/L
7440-39-3	Barium, Total	93				MS ug/L
7440-43-9	Cadmium, Total	<0.2				MS ug/L
7440-47-3	Chromium, Total	4.0				MS ug/L
7439-92-1	Lead, Total	3.4				MS ug/L
7439-97-6	Mercury, Total	<0.2				CV ug/L
7782-49-2	Selenium, Total	4.0				MS ug/L
7440-22-4	Silver, Total	<0.2				MS ug/L
7440-36-0	Antimony, Dissolved	<10				MS ug/L
7440-38-2	Arsenic, Dissolved	22 <i>J</i>				MS ug/L
7440-39-3	Barium, Dissolved	85				MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2				MS ug/L
7440-47-3	Chromium, Dissolved	8.9 <i>J</i>				MS ug/L
7439-92-1	Lead, Dissolved	<1.0				MS ug/L
7782-49-2	Selenium, Dissolved	4.9 <i>J</i>				MS ug/L

Sampled by: MKA/BLM
Date Sampled: 12/10/01
Time Sampled: 15:18
Date Received: 12/13/01
Time Received: 09:00

JMS
3/28/2002

000065

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-2	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295089

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	12		MS	ug/L
7440-39-3	Barium, Total	48		MS	ug/L
7440-43-9	Cadmium, Total	0.4		MS	ug/L
7440-47-3	Chromium, Total	4.8		MS	ug/L
7439-92-1	Lead, Total	84		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	* 3.1	J	MS	ug/L
7440-22-4	Silver, Total	<0.2		MS	ug/L
7440-36-0	Antimony, Dissolved	<10		MS	ug/L
7440-38-2	Arsenic, Dissolved	9.8 J		MS	ug/L
7440-39-3	Barium, Dissolved	25		MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2		MS	ug/L
7440-47-3	Chromium, Dissolved	6.8 J		MS	ug/L
7439-92-1	Lead, Dissolved	6.2		MS	ug/L
7782-49-2	Selenium, Dissolved	3.7 J		MS	ug/L

Sampled by: MKA/BLM
Date Sampled: 12/10/01
Time Sampled: 17:11
Date Received: 12/13/01
Time Received: 09:00

* See attached Statement of Data Qualifications.

Jms
3/20/01

000066

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
 Proj: RMC - Beech Grove, IN
 Subm: December 2001 Samples

Submittal Number: 35132- 32
 Location:
 Contact: Jennifer L. Rice
 Phone: (616) 975-4500

CAS No. EBI-121001 Data Qualifiers Units
 C | Q | M

Lab Sample No: 295090

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-39-3	Barium, Total	<10	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L
7440-36-0	Antimony, Dissolved	<10	MS	ug/L
7440-38-2	Arsenic, Dissolved	1.0 <i>US</i>	MS	ug/L
7440-39-3	Barium, Dissolved	<10	MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS	ug/L
7440-47-3	Chromium, Dissolved	1.0 <i>US</i>	MS	ug/L
7439-92-1	Lead, Dissolved	<1.0	MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 <i>US</i>	MS	ug/L

Sampled by: MKA/BLM
 Date Sampled: 12/10/01
 Time Sampled: 17:45
 Date Received: 12/13/01
 Time Received: 09:00

JMS
3/28/2002

000067

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
 Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-7S MS/MSD	Data Qualifiers C Q M	Units
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Lab Sample No: 295091

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	26	MS ug/L
7440-39-3	Barium, Total	25	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	2.8	MS ug/L
7439-92-1	Lead, Total	47	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	5.7	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	30 <i>J</i>	MS ug/L
7440-39-3	Barium, Dissolved	23	MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS ug/L
7440-47-3	Chromium, Dissolved	13 <i>J</i>	MS ug/L
7439-92-1	Lead, Dissolved	2.5	MS ug/L
7782-49-2	Selenium, Dissolved	6.5 <i>J</i>	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	09:50
Date Received:	12/13/01
Time Received:	09:00

JMS
 3/28/2002

000068

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-8S	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295092

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	13	MS ug/L
7440-39-3	Barium, Total	123	MS ug/L
7440-43-9	Cadmium, Total	0.4	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	23	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	14 <i>5</i>	MS ug/L
7440-39-3	Barium, Dissolved	135	MS ug/L
7440-43-9	Cadmium, Dissolved	0.3	MS ug/L
7440-47-3	Chromium, Dissolved	3.8 <i>5</i>	MS ug/L
7439-92-1	Lead, Dissolved	11	MS ug/L
7782-49-2	Selenium, Dissolved	<i>2.0 5</i>	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	12:28
Date Received:	12/13/01
Time Received:	09:00

JMR
3/28/2002

000069

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
 Proj: RMC - Beech Grove, IN
 Subm: December 2001 Samples

Submittal Number: 35132- 32
 Location:
 Contact: Jennifer L. Rice
 Phone: (616) 975-4500

CAS No.	MW-3	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295093

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	11		MS	ug/L
7440-39-3	Barium, Total	98		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	3.7		MS	ug/L
7440-22-4	Silver, Total	<0.2		MS	ug/L
7440-36-0	Antimony, Dissolved	<10		MS	ug/L
7440-38-2	Arsenic, Dissolved	8.4	✓	MS	ug/L
7440-39-3	Barium, Dissolved	113		MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2		MS	ug/L
7440-47-3	Chromium, Dissolved	6.6	✓	MS	ug/L
7439-92-1	Lead, Dissolved	<1.0		MS	ug/L
7782-49-2	Selenium, Dissolved	3.7	✓	MS	ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	13:51
Date Received:	12/13/01
Time Received:	09:00

Jms
 3/28/2002

000070

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		MW-3D	Data Qualifiers			Units
			C	Q	M	
	Lab Sample No:	295094				
7440-36-0	Antimony, Total	<10				MS ug/L
7440-38-2	Arsenic, Total	11				MS ug/L
7440-39-3	Barium, Total	102				MS ug/L
7440-43-9	Cadmium, Total	<0.2				MS ug/L
7440-47-3	Chromium, Total	<1.0				MS ug/L
7439-92-1	Lead, Total	<1.0				MS ug/L
7439-97-6	Mercury, Total	<0.2				CV ug/L
7782-49-2	Selenium, Total	2.7				MS ug/L
7440-22-4	Silver, Total	<0.2				MS ug/L
7440-36-0	Antimony, Dissolved	<10				MS ug/L
7440-38-2	Arsenic, Dissolved	8.8 <i>J</i>				MS ug/L
7440-39-3	Barium, Dissolved	123				MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2				MS ug/L
7440-47-3	Chromium, Dissolved	7.1 <i>J</i>				MS ug/L
7439-92-1	Lead, Dissolved	<1.0				MS ug/L
7782-49-2	Selenium, Dissolved	4.5 <i>J</i>				MS ug/L

Sampled by: MKA/BLM
Date Sampled: 12/11/01
Time Sampled: 14:15
Date Received: 12/13/01
Time Received: 09:00

Jms.
3/28/2002

000071

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		MW-5	Data Qualifiers			Units
			C	Q	M	
	Lab Sample No:	295095				
7440-36-0	Antimony, Total	<10				MS ug/L
7440-38-2	Arsenic, Total	5.4				MS ug/L
7440-39-3	Barium, Total	150				MS ug/L
7440-43-9	Cadmium, Total	<0.2				MS ug/L
7440-47-3	Chromium, Total	<1.0				MS ug/L
7439-92-1	Lead, Total	2.1				MS ug/L
7439-97-6	Mercury, Total	<0.2				CV ug/L
7782-49-2	Selenium, Total	<2.0				MS ug/L
7440-22-4	Silver, Total	<0.2				MS ug/L
7440-36-0	Antimony, Dissolved	<10				MS ug/L
7440-38-2	Arsenic, Dissolved	3.7 <i>3</i>				MS ug/L
7440-39-3	Barium, Dissolved	170				MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2				MS ug/L
7440-47-3	Chromium, Dissolved	4.0 <i>3</i>				MS ug/L
7439-92-1	Lead, Dissolved	<1.0				MS ug/L
7782-49-2	Selenium, Dissolved	<i>2.0 u3</i>				MS ug/L

Sampled by: MKA/BLM
Date Sampled: 12/11/01
Time Sampled: 15:13
Date Received: 12/13/01
Time Received: 09:00

JMB
3/28/02

000072

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-4	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295096

7440-36-0	Antimony, Total	<10			MS	ug/L
7440-38-2	Arsenic, Total	<1.0			MS	ug/L
7440-39-3	Barium, Total	187			MS	ug/L
7440-43-9	Cadmium, Total	<0.2			MS	ug/L
7440-47-3	Chromium, Total	<1.0			MS	ug/L
7439-92-1	Lead, Total	1.5			MS	ug/L
7439-97-6	Mercury, Total	<0.2			CV	ug/L
7782-49-2	Selenium, Total	<2.0			MS	ug/L
7440-22-4	Silver, Total	<0.2			MS	ug/L
7440-36-0	Antimony, Dissolved	<10			MS	ug/L
7440-38-2	Arsenic, Dissolved	1.0 <i>us</i>			MS	ug/L
7440-39-3	Barium, Dissolved	203			MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2			MS	ug/L
7440-47-3	Chromium, Dissolved	3.4 <i>5</i>			MS	ug/L
7439-92-1	Lead, Dissolved	<1.0			MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 <i>us</i>			MS	ug/L

Sampled by: MKA/BLM
Date Sampled: 12/11/01
Time Sampled: 16:14
Date Received: 12/13/01
Time Received: 09:00

JMS
3/28/2002

000073

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-6	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295097

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	2.2		MS	ug/L
7440-39-3	Barium, Total	79		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	1.3		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2		MS	ug/L
7440-36-0	Antimony, Dissolved	<10		MS	ug/L
7440-38-2	Arsenic, Dissolved	1.4 J		MS	ug/L
7440-39-3	Barium, Dissolved	89		MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2		MS	ug/L
7440-47-3	Chromium, Dissolved	3.8 J		MS	ug/L
7439-92-1	Lead, Dissolved	<1.0		MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 WJ		MS	ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	17:25
Date Received:	12/13/01
Time Received:	09:00

000074

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB2-121101 Data Qualifiers Units
C | Q | M

Lab Sample No: 295098

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-39-3	Barium, Total	<10	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L
7440-36-0	Antimony, Dissolved	<10	MS	ug/L
7440-38-2	Arsenic, Dissolved	1.0 <i>us</i>	MS	ug/L
7440-39-3	Barium, Dissolved	<10	MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS	ug/L
7440-47-3	Chromium, Dissolved	1.0 <i>us</i>	MS	ug/L
7439-92-1	Lead, Dissolved	<1.0	MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 <i>us</i>	MS	ug/L

Sampled by: MKA/BLM
Date Sampled: 12/11/01
Time Sampled: 17:45
Date Received: 12/13/01
Time Received: 09:00

Jms
3/28/2002

000075

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		R2SED-1C	Data Qualifiers	Units
			C Q M	
	Lab Sample No:	295099		
7440-38-2	Arsenic, Total	10		MS mg/kg dry
7439-92-1	Lead, Total	19 5		MS mg/kg dry
Sampled by:	MKA/BLM			
Date Sampled:	12/12/01			
Time Sampled:	11:25			
Date Received:	12/13/01			
Time Received:	09:00			

ms
3/28/2002

000076

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-1D	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295100

7440-38-2	Arsenic, Total	5.5		MS	mg/kg dry
7439-92-1	Lead, Total	62 J		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	11:36
Date Received:	12/13/01
Time Received:	09:00

JMR
3/28/2002

000077

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-3C	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295101

7440-38-2	Arsenic, Total	13			MS	mg/kg dry
7439-92-1	Lead, Total	622	✓			MS mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	12:10
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000078

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-3D	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295102

7440-38-2	Arsenic, Total	12		MS	mg/kg dry
7439-92-1	Lead, Total	691		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	12:20
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000079

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		R2SED-5C	Data Qualifiers	Units
			C Q M	
	Lab Sample No:	295103		
7440-38-2	Arsenic, Total	5.7		MS mg/kg dry
7439-92-1	Lead, Total	73 ⁵		MS mg/kg dry
Sampled by:	MKA/BLM			
Date Sampled:	12/12/01			
Time Sampled:	12:40			
Date Received:	12/13/01			
Time Received:	09:00			

JMR
3/28/2002

000080

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-5D

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295104

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

7.3

20 *5*

| MS mg/kg dry

| MS mg/kg dry

Sampled by:

MKA/BLM

Date Sampled:

12/12/01

Time Sampled:

12:50

Date Received:

12/13/01

Time Received:

09:00

JMS
3/28/2002

000081



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB3-121201 Data Qualifiers Units

C | Q | M

Lab Sample No:

295105

7440-38-2 Arsenic, Total

<1.0

MS ug/L

7439-92-1 Lead, Total

<1.0

MS ug/L

Sampled by:

MKA/BLM

Date Sampled:

12/12/01

Time Sampled:

13:05

Date Received:

12/13/01

Time Received:

09:00

gmis
12/28/2001

000082

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submission Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-7C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295106

7440-38-2	Arsenic, Total	13		MS	mg/kg dry
7439-92-1	Lead, Total	61 <i>5</i>		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	13:38
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000083

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-7D	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295107

7440-38-2	Arsenic, Total	9.2			MS	mg/kg dry
7439-92-1	Lead, Total	27 <i>J</i>			MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	13:40
Date Received:	12/13/01
Time Received:	09:00

ms
12/28/2001

000084

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-7CD	Data Qualifiers	Units
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C		Q	M
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Lab Sample No: 295108

7440-38-2	Arsenic, Total	10		MS	mg/kg dry
7439-92-1	Lead, Total	57	5		MS mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	13:58
Date Received:	12/13/01
Time Received:	09:00

ms
3/28/2002

000085

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-9C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295109

7440-38-2 Arsenic, Total

8.9

MS mg/kg dry

7439-92-1 Lead, Total

25 *5*

MS mg/kg dry

Sampled by:

MKA/BLM

Date Sampled:

12/12/01

Time Sampled:

14:15

Date Received:

12/13/01

Time Received:

09:00

ms
3/28/2002
000086

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-9D MS/MSD	Data Qualifiers C Q M	Units
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Lab Sample No: 295110

7440-38-2	Arsenic, Total	8.2	MS mg/kg dry
7439-92-1	Lead, Total	39 <i>5</i>	MS mg/kg dry

Sampled by: MKA/BLM
Date Sampled: 12/12/01
Time Sampled: 14:20
Date Received: 12/13/01
Time Received: 09:00

* See attached Statement of Data Qualifications.

JMS
3/28/2002

000087

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-51-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295111

7440-38-2	Arsenic, Total	6.6		MS	mg/kg dry
7439-92-1	Lead, Total	285		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	15:05
Date Received:	12/13/01
Time Received:	09:00

*ms
3/28/2002*

000088

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-51-B Data Qualifiers Units
C | Q | M

Lab Sample No: 295112

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

7.0 | MS mg/kg dry
199 5 | MS mg/kg dry

Sampled by: MKA/BLM
Date Sampled: 12/12/01
Time Sampled: 15:06
Date Received: 12/13/01
Time Received: 09:00

*ms
2/28/02*

000089

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-4A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295447

7440-38-2	Arsenic, Total	28 J	MS	mg/kg dry
7439-92-1	Lead, Total	2490	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	10:20
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB1-121301 Data Qualifiers Units
C | Q | M

Lab Sample No: 295448

7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	10:25
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/02

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-4A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295449

7440-38-2	Arsenic, Total	13 ⁵			MS	mg/kg dry
7439-92-1	Lead, Total	874			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	10:29
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-4A-4D Data Qualifiers Units
C | Q | M

Lab Sample No: 295450

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

26 ⁵ | MS mg/kg dry
2320 | MS mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/13/01
Time Sampled: 10:45
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-4A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295451
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7440-38-2	Arsenic, Total	18 ⁵			MS	mg/kg dry
7439-92-1	Lead, Total	1420			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	10:46
Date Received:	12/17/01
Time Received:	09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-3A-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295452

7440-38-2 Arsenic, Total

36 J

MS mg/kg dry

7439-92-1 Lead, Total

1620

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

11:29

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-3A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295453

7440-38-2	Arsenic, Total	19	MS	mg/kg dry
7439-92-1	Lead, Total	1410	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	11:35
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-3A-C

Data Qualifiers

Units

MS/MSD

C

Q

M

Lab Sample No:

295454

7440-38-2 Arsenic, Total

6.3

MS mg/kg dry

7439-92-1 Lead, Total

1330

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

11:40

Date Received:

12/17/01

Time Received:

09:15

* See attached Statement of Data Qualifications.

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB2-121301 Data Qualifiers Units
C | Q | M

Lab Sample No:

295455

7440-38-2 Arsenic, Total

<1.0 | MS ug/L

7439-92-1 Lead, Total

<1.0 | MS ug/L

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

11:55

Date Received:

12/17/01

Time Received:

09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-2A-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295456

7440-38-2 Arsenic, Total

16 *5*

MS mg/kg dry

7439-92-1 Lead, Total

918

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

12:07

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-2A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295457
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7440-38-2	Arsenic, Total	15 ³			MS	mg/kg dry
7439-92-1	Lead, Total	4120			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:16
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submission Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-2A-C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295458

7440-38-2 Arsenic, Total

4.6 *J*

MS mg/kg dry

7439-92-1 Lead, Total

816

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

12:20

Date Received:

12/17/01

Time Received:

09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-2A-AD	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295459
----------------	--------

7440-38-2	Arsenic, Total	7.8	MS	mg/kg dry
7439-92-1	Lead, Total	996	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:27
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

EB3-121301 Data Qualifiers Units
C | Q | M

Lab Sample No: 295460

7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:48
Date Received:	12/17/01
Time Received:	09:15

*ms
3/28/02*

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-1A-A	Data Qualifiers	Units
MS/MSD	C Q M	

Lab Sample No:

295461

7440-38-2	Arsenic, Total
7439-92-1	Lead, Total

58		MS	mg/kg dry
2250		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

12:52

Date Received:

12/17/01

Time Received:

09:15

Jms
3/28/20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Subm: 12/13-14/01 Samples

Phone: (616) 975-4500

CAS No.

R2SB-1A-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295462

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

7.6 J
609

| MS mg/kg dry
| MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

13:05

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-1A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295463

7440-38-2	Arsenic, Total	7.8 <i>5</i>		MS	mg/kg dry
7439-92-1	Lead, Total	4230		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	13:27
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-1A-CD Data Qualifiers Units
C | Q | M

Lab Sample No: 295464

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total8.3 *J*
5010| MS mg/kg dry
| MS mg/kg drySampled by: BLM/MAC
Date Sampled: 12/13/01
Time Sampled: 13:57
Date Received: 12/17/01
Time Received: 09:15*ms*
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-13A-A Data Qualifiers Units

C | Q | M

Lab Sample No:

295465

7440-38-2 Arsenic, Total

14 *5*

| MS mg/kg dry

7439-92-1 Lead, Total

2910

| MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

14:11

Date Received:

12/17/01

Time Received:

09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Subm: 12/13-14/01 Samples

Phone: (616) 975-4500

CAS No.

R2SB-13A-B Data Qualifiers Units
C | Q | M

Lab Sample No: 295466

7440-38-2 Arsenic, Total

2.1 *5*

MS mg/kg dry

7439-92-1 Lead, Total

24

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

14:17

Date Received:

12/17/01

Time Received:

09:15

*ms
3/28/02*

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-13A-C Data Qualifiers Units
C | Q | M

Lab Sample No: 295467

7440-38-2 Arsenic, Total

4.5 *5*

MS mg/kg dry

7439-92-1 Lead, Total

11

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

14:25

Date Received:

12/17/01

Time Received:

09:15

*Jms
3/20/02*

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-52-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295468

7440-38-2	Arsenic, Total	4.6 <i>J</i>			MS	mg/kg dry
7439-92-1	Lead, Total	300			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	15:01
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-52-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295469

7440-38-2 Arsenic, Total

3.3

5

MS mg/kg dry

7439-92-1 Lead, Total

5.7

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

15:12

Date Received:

12/17/01

Time Received:

09:15

JMD
3/28/20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB5-121301 Data Qualifiers Units

C | Q | M

Lab Sample No: 295470

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

<1.0		MS	ug/L
<1.0		MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	15:16
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-52-AD	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295471
----------------	--------

7440-38-2	Arsenic, Total	9.3 ^J			MS	mg/kg dry
7439-92-1	Lead, Total	338			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	15:21
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-53-A

Data Qualifiers

Units

MS/MSD

C

Q

M

Lab Sample No:

295472

7440-38-2 Arsenic, Total

8.4

MS mg/kg dry

7439-92-1 Lead, Total

499

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

16:05

Date Received:

12/17/01

Time Received:

09:15

* See attached Statement of Data Qualifications.

Jms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-53-B	Data Qualifiers	Units
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Lab Sample No:	295473
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7440-38-2	Arsenic, Total	3.3 ⁵		MS	mg/kg dry
7439-92-1	Lead, Total	58		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	16:10
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-53-BD Data Qualifiers Units
C | Q | M

Lab Sample No: 295474

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

3.0 <i>J</i>		MS	mg/kg dry
52		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	16:30
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB6-121301 Data Qualifiers Units
C | Q | M

Lab Sample No: 295475

7440-38-2	Arsenic, Total	<1.0			MS ug/L
7439-92-1	Lead, Total	2.6			MS ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	16:36
Date Received:	12/17/01
Time Received:	09:15

Jms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB1-121401 Data Qualifiers Units

C | Q | M

Lab Sample No: 295476

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	1.4		MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	09:20
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB2-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295477

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	2.1		MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 10:05
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-35A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295478

7440-36-0	Antimony, Total	1280	MS	mg/kg dry
7440-38-2	Arsenic, Total	154	MS	mg/kg dry
7440-43-9	Cadmium, Total	83	MS	mg/kg dry
7439-92-1	Lead, Total	70400	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:41
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-35A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295479

7440-36-0	Antimony, Total	5.3	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.1	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.66	MS	mg/kg dry
7439-92-1	Lead, Total	279	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:42
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-35A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295480

7440-36-0	Antimony, Total	3150	MS	mg/kg dry
7440-38-2	Arsenic, Total	408	MS	mg/kg dry
7440-43-9	Cadmium, Total	144	MS	mg/kg dry
7439-92-1	Lead, Total	350000	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:43
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-35A-D	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295481

7440-36-0	Antimony, Total	4.9	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.0	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.62	MS	mg/kg dry
7439-92-1	Lead, Total	285	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:44
Date Received:	12/17/01
Time Received:	09:15

Jms
3/28/2007

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-35A-E Data Qualifiers Units
C | Q | M

Lab Sample No: 295482

7440-36-0	Antimony, Total	3.9	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.3	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.99	MS	mg/kg dry
7439-92-1	Lead, Total	499	MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 12:45
Date Received: 12/17/01
Time Received: 09:15

Jms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-35A-F	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295483

7440-36-0	Antimony, Total	1.7		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.3		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	69		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:50
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

CSB-35A-G

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295484

7440-36-0	Antimony, Total	6.3	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.6	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.89	MS	mg/kg dry
7439-92-1	Lead, Total	156	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:53
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1****Advanced GeoServices Corporation**

Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-H

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295485

7440-36-0 Antimony, Total

27 J

| MS mg/kg dry

7440-38-2 Arsenic, Total

8.1

| MS mg/kg dry

7440-43-9 Cadmium, Total

1.5 J

| MS mg/kg dry

7439-92-1 Lead, Total

1520 J

| MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

12:54

Date Received:

12/17/01

Time Received:

09:15

*JMS
3/28/2002*

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-I Data Qualifiers Units
C | Q | M

Lab Sample No: 295486

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.9		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	11		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:55
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/02

**ANALYTICAL REPORT
USEPA CLP FORM 1****Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-J

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295487

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	4.1	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	11	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:56
Date Received:	12/17/01
Time Received:	09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-HD Data Qualifiers Units

C | Q | M

Lab Sample No:

295488

7440-36-0	Antimony, Total	11 <i>5</i>	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.75 <i>3</i>	MS	mg/kg dry
7439-92-1	Lead, Total	413 <i>3</i>	MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

13:14

Date Received:

12/17/01

Time Received:

09:15

JMR
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-26A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295489

7440-36-0	Antimony, Total	6.4		MS	mg/kg dry
7440-38-2	Arsenic, Total	12		MS	mg/kg dry
7440-43-9	Cadmium, Total	46		MS	mg/kg dry
7439-92-1	Lead, Total	174		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:25
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-26A-B	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295490

7440-36-0	Antimony, Total	1.7			MS	mg/kg dry
7440-38-2	Arsenic, Total	11			MS	mg/kg dry
7440-43-9	Cadmium, Total	40			MS	mg/kg dry
7439-92-1	Lead, Total	88			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:26
Date Received:	12/17/01
Time Received:	09:15

JMS
12/20/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-26A-C Data Qualifiers Units
C | Q | M

Lab Sample No: 295491

7440-36-0	Antimony, Total	1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.4		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	40		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 13:28
Date Received: 12/17/01
Time Received: 09:15

gms
12/28/01

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-26A-D Data Qualifiers Units
MS/MSD C | Q | M

Lab Sample No: 295492

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.2		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.54		MS	mg/kg dry
7439-92-1	Lead, Total	25		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:30
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-26A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295493
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7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	5.8	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	23	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:35
Date Received:	12/17/01
Time Received:	09:15

Jms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB4-121401 Data Qualifiers Units

C | Q | M

Lab Sample No:

295494

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

13:34

Date Received:

12/17/01

Time Received:

09:15

gms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-26A-CD Data Qualifiers Units
C | Q | M

Lab Sample No:

295495

7440-36-0	Antimony, Total	1.5	MS	mg/kg dry
7440-38-2	Arsenic, Total	5.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.53	MS	mg/kg dry
7439-92-1	Lead, Total	30	MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

13:48

Date Received:

12/17/01

Time Received:

09:15

gms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295496

7440-36-0	Antimony, Total	3.4	MS	mg/kg dry
7440-38-2	Arsenic, Total	3.2	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	903	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:55
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295497

7440-36-0	Antimony, Total	<1.0	MS	mg/kg	dry
7440-38-2	Arsenic, Total	1.5	MS	mg/kg	dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg	dry
7439-92-1	Lead, Total	18	MS	mg/kg	dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:56
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295498

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	1.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	44	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:59
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/02

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-D	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295499

7440-36-0	Antimony, Total	2660 J	MS mg/kg dry
7440-38-2	Arsenic, Total	989	MS mg/kg dry
7440-43-9	Cadmium, Total	1000 J	MS mg/kg dry
7439-92-1	Lead, Total	249000	MS mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:59
Date Received:	12/17/01
Time Received:	09:15

JMS
3/20/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295500

7440-36-0	Antimony, Total	16 ³	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.8	MS	mg/kg dry
7440-43-9	Cadmium, Total	1.7	MS	mg/kg dry
7439-92-1	Lead, Total	847	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:01
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB5-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295501

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 14:05
Date Received: 12/17/01
Time Received: 09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-DD	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295502

7440-36-0	Antimony, Total	1650 ³		MS	mg/kg dry
7440-38-2	Arsenic, Total	821		MS	mg/kg dry
7440-43-9	Cadmium, Total	346 ³		MS	mg/kg dry
7439-92-1	Lead, Total	185000		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:19
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-38A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295503

7440-36-0	Antimony, Total	156 ³		MS	mg/kg dry
7440-38-2	Arsenic, Total	67		MS	mg/kg dry
7440-43-9	Cadmium, Total	110		MS	mg/kg dry
7439-92-1	Lead, Total	6200		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 14:19
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

CSB-38A-B Data Qualifiers Units
C | Q | M

Lab Sample No: 295504

7440-36-0	Antimony, Total	11.0 <i>us</i>		MS	mg/kg dry
7440-38-2	Arsenic, Total	7.9		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	14		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:20
Date Received:	12/17/01
Time Received:	09:15

gms
12/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-38A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295505

7440-36-0	Antimony, Total	11.0 <i>us</i>	MS	mg/kg dry
7440-38-2	Arsenic, Total	9.3	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	22	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:22
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

Subm: 12/13-14/01 Samples

CAS No.	CSB-38A-D MS/MSD	Data Qualifiers C Q M	Units
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Lab Sample No: 295506

7440-36-0	Antimony, Total	41.0 <i>us</i>		MS	mg/kg dry
7440-38-2	Arsenic, Total	2.5	J	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	12		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:23
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

JMS
3/28/02

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-38A-E Data Qualifiers Units
C | Q | M

Lab Sample No: 295507

7440-36-0	Antimony, Total	6.2		MS	mg/kg dry
7440-38-2	Arsenic, Total	8.6		MS	mg/kg dry
7440-43-9	Cadmium, Total	6.8		MS	mg/kg dry
7439-92-1	Lead, Total	319		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 14:27
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-13A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295508

7440-36-0	Antimony, Total	80		MS	mg/kg dry
7440-38-2	Arsenic, Total	11		MS	mg/kg dry
7440-43-9	Cadmium, Total	64		MS	mg/kg dry
7439-92-1	Lead, Total	2300		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:45
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-13A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295509

7440-36-0	Antimony, Total	197	MS	mg/kg dry
7440-38-2	Arsenic, Total	22	MS	mg/kg dry
7440-43-9	Cadmium, Total	29	MS	mg/kg dry
7439-92-1	Lead, Total	1070	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:46
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-13A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295510

7440-36-0	Antimony, Total	5.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.6	MS	mg/kg dry
7440-43-9	Cadmium, Total	36	MS	mg/kg dry
7439-92-1	Lead, Total	75	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:47
Date Received:	12/17/01
Time Received:	09:15

md
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-13A-D

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295511

7440-36-0	Antimony, Total	1.9		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.9		MS	mg/kg dry
7440-43-9	Cadmium, Total	1.7		MS	mg/kg dry
7439-92-1	Lead, Total	39		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

14:48

Date Received:

12/17/01

Time Received:

09:15

JMS
12/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-13A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295512

7440-36-0	Antimony, Total	2.9 ⁵	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.0	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.99	MS	mg/kg dry
7439-92-1	Lead, Total	27	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:49
Date Received:	12/17/01
Time Received:	09:15

MS 3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB7-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295513

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 14:58
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-28A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295514

7440-36-0	Antimony, Total	5.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	53	MS	mg/kg dry
7440-43-9	Cadmium, Total	17	MS	mg/kg dry
7439-92-1	Lead, Total	30	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:12
Date Received:	12/17/01
Time Received:	09:15

*ms
3/28/02*

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-28A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295515

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.1		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	13		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:15
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/12

**ANALYTICAL REPORT
USEPA CLP FORM 1****Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-28A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295516

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	7.9	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	27 <i>5</i>	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:16
Date Received:	12/17/01
Time Received:	09:15

*JMS
3/28/2002*

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-28A-D	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295517

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	14	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:17
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-28A-E

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295518

7440-36-0 Antimony, Total

11.0 *us*

MS mg/kg dry

7440-38-2 Arsenic, Total

9.4

MS mg/kg dry

7440-43-9 Cadmium, Total

<0.50

MS mg/kg dry

7439-92-1 Lead, Total

16

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

15:11

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-28A-CD	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295519

7440-36-0	Antimony, Total	3.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	9.1	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	118 <i>5</i>	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:36
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

Subm: 12/13-14/01 Samples

CAS No.

CSB-30A-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295520

7440-36-0	Antimony, Total	63		MS	mg/kg dry
7440-38-2	Arsenic, Total	30 <i>J</i>		MS	mg/kg dry
7440-43-9	Cadmium, Total	4.2		MS	mg/kg dry
7439-92-1	Lead, Total	2360		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

15:42

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-30A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295521

7440-36-0	Antimony, Total	14	MS	mg/kg dry
7440-38-2	Arsenic, Total	13 <i>3</i>	MS	mg/kg dry
7440-43-9	Cadmium, Total	1.3	MS	mg/kg dry
7439-92-1	Lead, Total	366	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:43
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB8-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295522

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 15:44
Date Received: 12/17/01
Time Received: 09:15

MS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-30A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295523

7440-36-0	Antimony, Total	7.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	9.1	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.83	MS	mg/kg dry
7439-92-1	Lead, Total	243	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:48
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-30A-D Data Qualifiers Units
C | Q | M

Lab Sample No: 295524

7440-36-0	Antimony, Total	1.2		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.6 <i>✓</i>		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	32		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:49
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-30A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295525

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.6 <i>J</i>	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	13 <i>U</i>	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:51
Date Received:	12/17/01
Time Received:	09:15

MS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-A Data Qualifiers Units

C | Q | M

Lab Sample No:

295526

7440-36-0	Antimony, Total	5.7		MS	mg/kg dry
7440-38-2	Arsenic, Total	4.5		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.59		MS	mg/kg dry
7439-92-1	Lead, Total	1780		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

16:13

Date Received:

12/17/01

Time Received:

09:15

MS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-B

Data Qualifiers
C | Q | M

Units

Lab Sample No:

295527

7440-36-0	Antimony, Total	31 ⁵		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.1		MS	mg/kg dry
7440-43-9	Cadmium, Total	1.3		MS	mg/kg dry
7439-92-1	Lead, Total	1210		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

16:14

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/01

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295528
----------------	--------

7440-36-0	Antimony, Total	1720	MS	mg/kg dry
7440-38-2	Arsenic, Total	433	MS	mg/kg dry
7440-43-9	Cadmium, Total	132	MS	mg/kg dry
7439-92-1	Lead, Total	256000 <i>5</i>	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:16
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB9-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295529

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 16:18
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-30A-CD Data Qualifiers Units
C | Q | M

Lab Sample No: 295530

7440-36-0	Antimony, Total	4.6	5		MS	mg/kg dry
7440-38-2	Arsenic, Total	9.5	5		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.71			MS	mg/kg dry
7439-92-1	Lead, Total	228			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:18
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-10A-D	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295531

7440-36-0	Antimony, Total	4260 3	MS	mg/kg dry
7440-38-2	Arsenic, Total	2730	MS	mg/kg dry
7440-43-9	Cadmium, Total	527	MS	mg/kg dry
7439-92-1	Lead, Total	475000	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:21
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-E Data Qualifiers Units
C | Q | M

Lab Sample No: 295532

7440-36-0	Antimony, Total	6.7		MS	mg/kg dry
7440-38-2	Arsenic, Total	7.1 <i>J</i>		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.61		MS	mg/kg dry
7439-92-1	Lead, Total	253		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:22
Date Received:	12/17/01
Time Received:	09:15

ms
3/20/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-32A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295533

7440-36-0	Antimony, Total	2190 ⁵		MS	mg/kg dry
7440-38-2	Arsenic, Total	394		MS	mg/kg dry
7440-43-9	Cadmium, Total	158		MS	mg/kg dry
7439-92-1	Lead, Total	164000		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 16:56
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-32A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295534

7440-36-0	Antimony, Total	1060 <i>5</i>	MS	mg/kg dry
7440-38-2	Arsenic, Total	199	MS	mg/kg dry
7440-43-9	Cadmium, Total	<i>4</i> 47	MS	mg/kg dry
7439-92-1	Lead, Total	90100	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:57
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

*ms
12/20/01*

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-32A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295535

7440-36-0	Antimony, Total	1010 J	MS	mg/kg dry
7440-38-2	Arsenic, Total	230	MS	mg/kg dry
7440-43-9	Cadmium, Total	38	MS	mg/kg dry
7439-92-1	Lead, Total	64000	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:58
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

gms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Subm: 12/13-14/01 Samples

Phone: (616) 975-4500

CAS No.

CSB-32A-D Data Qualifiers Units
MS/MSD C | Q | M

Lab Sample No: 295536

7440-36-0	Antimony, Total	2.7		MS	mg/kg dry
7440-38-2	Arsenic, Total	8.0 <i>J</i>		MS	mg/kg dry
7440-43-9	Cadmium, Total	<i>J</i> <0.50	J	MS	mg/kg dry
7439-92-1	Lead, Total	40		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 16:59
Date Received: 12/17/01
Time Received: 09:15

* See attached Statement of Data Qualifications.

Jms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-32A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295537

7440-36-0	Antimony, Total	1.5	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.5 <i>J</i>	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	20 <i>u</i>	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	17:01
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-CD	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295538

7440-36-0	Antimony, Total	1520 J	MS	mg/kg dry
7440-38-2	Arsenic, Total	313	MS	mg/kg dry
7440-43-9	Cadmium, Total	112	MS	mg/kg dry
7439-92-1	Lead, Total	169000 J	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:36
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	STRW-1	Data Qualifiers	Units
	121401	C Q M	

Lab Sample No: 295539

7440-36-0	Antimony, Total	46 ⁵	MS	ug/L
7440-38-2	Arsenic, Total	4.7 ⁵	MS	ug/L
7440-43-9	Cadmium, Total	11	MS	ug/L
7439-92-1	Lead, Total	811	MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	17:30
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

gms
3/28/2002

INORGANIC DATA VALIDATION SUMMARY

Site Name: Beechgrove RMC
 Project Number: 98-478-05
 Sampling Date(s): 12/14/01

Laboratory: Trimatrix
 Case /Order No.: 35/32-34

Compound List: ☐ TAL ☐ Priority Pollutant ☐ Appendix IX ☒ Other Sb, As, Cd, Pb
 Method: ☐ CLP SOW ILM04. ☐ 40 CFR 136 ☒ SW-846 Method ☐ Other _____

6020

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			
Initial Calibrations	✓			
Continuing Calibrations		✓	✓	% recovery > 110%, No associated samples
CRDL Standards	✓			
Blank Analysis Results	✓			
ICP Interference Check Sample Recoveries	✓			
Duplicate Results	✓			
Field Duplicate Results			✓	CSB-10A-H CSB-10A-HD
Spike Analysis Recoveries	✓	✓		MS/MSD unavailable for CSB-1A-F due to high analyte conc.
Serial Dilution Results	✓			
Laboratory Control Sample Results	✓			
Furnace AA QC Analysis				NA
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments: _____

Accept - No qualification required.
 FYI - For your information only, no qualification necessary.
 Qualify - Qualify as rejected, estimated or biased
 NA - Not applicable.
 NR - Not reviewed.

QA Scientist Matthew Potter/Adrian
 Date 2/18/02 3/19/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-F	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 297370

7440-36-0	Antimony, Total	1.7		MS	mg/kg dry
7440-38-2	Arsenic, Total	8.5		MS	mg/kg dry
7440-43-9	Cadmium, Total	2.0		MS	mg/kg dry
7439-92-1	Lead, Total	X 170		MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:07
Date Received:	01/24/02
Time Received:	09:10

* See attached Statement of Data Qualifications.

MP 2/18/02
000015



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-G	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297371

7440-36-0	Antimony, Total	1.6			MS	mg/kg dry
7440-38-2	Arsenic, Total	5.6			MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	U		MS	mg/kg dry
7439-92-1	Lead, Total	65			MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:09
Date Received:	01/24/02
Time Received:	09:10

MP 2/13/02

000016

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-H	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297372

7440-36-0	Antimony, Total	2.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.0		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	U	MS	mg/kg dry
7439-92-1	Lead, Total	82		MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:10
Date Received:	01/24/02
Time Received:	09:10

WP 2/18/02

000017

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-I	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297373

7440-36-0	Antimony, Total	1.4		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.7		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	U	MS	mg/kg dry
7439-92-1	Lead, Total	47		MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:12
Date Received:	01/24/02
Time Received:	09:10

WP 2/18/02

000018

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-J	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297374

7440-36-0	Antimony, Total	3.6		MS	mg/kg	dry
7440-38-2	Arsenic, Total	5.7		MS	mg/kg	dry
7440-43-9	Cadmium, Total	<0.50	U	MS	mg/kg	dry
7439-92-1	Lead, Total	144		MS	mg/kg	dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:13
Date Received:	01/24/02
Time Received:	09:10

MP 2/12/02
000019



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-F

Data Qualifiers

Units

C | Q | M

Lab Sample No:

297375

7440-36-0	Antimony, Total	2960			MS	mg/kg dry
7440-38-2	Arsenic, Total	1700			MS	mg/kg dry
7440-43-9	Cadmium, Total	363			MS	mg/kg dry
7439-92-1	Lead, Total	288000			MS	mg/kg dry

Sampled by:

BMG/MA

Date Sampled:

12/14/01

Time Sampled:

16:25

Date Received:

01/24/02

Time Received:

09:10

MAP 2/18/02

000020



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-G	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297376

7440-36-0	Antimony, Total	12	MS	mg/kg dry
7440-38-2	Arsenic, Total	28	MS	mg/kg dry
7440-43-9	Cadmium, Total	7.2	MS	mg/kg dry
7439-92-1	Lead, Total	1090	MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	16:26
Date Received:	01/24/02
Time Received:	09:10

MP 2/18/02

000021

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-H

Data Qualifiers

Units

C | Q | M

Lab Sample No:

297377

7440-36-0	Antimony, Total	1.8		MS	mg/kg dry
7440-38-2	Arsenic, Total	11		MS	mg/kg dry
7440-43-9	Cadmium, Total	5.1		MS	mg/kg dry
7439-92-1	Lead, Total	101	J	MS	mg/kg dry

Sampled by:

BMG/MA

Date Sampled:

12/14/01

Time Sampled:

16:28

Date Received:

01/24/02

Time Received:

09:10

IMP 2/18/02

000022



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-HD	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297378

7440-36-0	Antimony, Total	1.6		MS	mg/kg dry
7440-38-2	Arsenic, Total	14		MS	mg/kg dry
7440-43-9	Cadmium, Total	4.7		MS	mg/kg dry
7439-92-1	Lead, Total	42	J	MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	16:48
Date Received:	01/24/02
Time Received:	09:10

MP 2/18/02

000023



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-I Data Qualifiers Units

C | Q | M

Lab Sample No:

297379

7440-36-0 Antimony, Total

6.1

MS mg/kg dry

7440-38-2 Arsenic, Total

44

MS mg/kg dry

7440-43-9 Cadmium, Total

20

MS mg/kg dry

7439-92-1 Lead, Total

365

MS mg/kg dry

SAW

Sampled by:

BMG/MA

Date Sampled:

12/14/01

Time Sampled:

16:30

Date Received:

01/24/02

Time Received:

09:10

UMP 2/18/02

000024

QUALITY CONTROL REPORT
INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV-CCV)
USEPA CLP FORM 2A

SDG No.	35132 -34	Parameter	Lead, Total
Batch No.	181639	Ref. Cit.	EPA-200.8/6020
Instrument ID	114	Matrix	WATER
		Units	ug/L

Verification QC Type	True Value	Amount Found	% Recovery	Acceptance Window-%	Date	Analyst
ICV 1	100	97.6	98	90 - 110	01/28/02	SMC
CCV 1	50	49.3	99	90 - 110	01/28/02	SPLM
CCV 2	50	50.1	100	90 - 110	01/28/02	SPLM
CCV 3	50	50.1	100	90 - 110	01/28/02	SPLM
CCV 4	40	49.5	124	90 - 110	01/28/02	SPLM

Sample associated CSP-10A-I
No Associated samples

AWD 3/19/2002
MM 2/18/02
000030

Beechgrove
SERIAL DILUTIONS

Run Date	Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50
01/28/2002	As	297370	CSB-1A-F	8.5	8.8	4.54	0.097	4.85
	Cd			2.00	1.93	3.24	0.028	1.4
	Pb			173.5	170.29	1.87	0.029	1.45
01/29/2002	Sb	297370	CSB-1A-F	1.7	2.0	14.78	0.061	3.05
* Denotes that parameter was qualified because %D was >10% and both the Initial and Serial Dilution Concentrations were > IDL*50								

MP 2/18/02

Site Name: RMC Beech Grove
Project Number: 98-478-04

Laboratory: Trimatrix

Field Duplicates

Sample ID	Analyte	Units	Result	RPD	Qualifier
CSB-10A-H	Total Arsenic	mg/kg	11	24.00	
CSB-10A-HD		mg/kg	14		
	Total Antimony	mg/kg	1.8	11.76	
		mg/kg	1.6		
	Total Cadmium	mg/kg	5.1	8.16	
		mg/kg	4.7		
	Total Lead	mg/kg	101	82.52	*
		mg/kg	42		

Duplicate Criteria: Aqueous matrices <30 % RPD; Soil/Solid matrices <40 %RPD.

* - Denotes %RPD outside criteria.

NA - Duplicate relative percent difference cannot be calculated.

ND - Not detected.

UMP 2/18/02

RMC BEECHGROVE
Soil Sampling, 12/14/2001
Trimatrix# 351132-33 Project# 98-478-04

Page 1 of 2

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Units	Arsenic			Lead			Antimony			Cadmium		
						Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
EB-1-121401	295476	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1	1.4		1		U	10		U	0.2
EB-2-121401	295477	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1	2.1		1		U	10		U	0.2
CSB-35A-A	295478	12/14/2001	Soil		mg/kg	154		6.3	70,400		1,250	1,280		25	83		3.2
CSB-35A-B	295479	12/14/2001	Soil		mg/kg	6.1		1	279		6.3	5.3		1	0.66		0.5
CSB-35A-C	295480	12/14/2001	Soil		mg/kg	408		13	350,000		6,250	3,150		100	144		13
CSB-35A-D	295481	12/14/2001	Soil		mg/kg	6		1	285		6.3	4.9		1	0.62		0.5
CSB-35A-E	295482	12/14/2001	Soil		mg/kg	6.3		1	499		13	3.9		1	0.99		0.5
CSB-35A-F	295483	12/14/2001	Soil		mg/kg	6.3		1	69		1.3	1.7		1		U	0.5
CSB-35A-G	295484	12/14/2001	Soil		mg/kg	6.6		1	156		3.2	6.3		1	0.89		0.5
CSB-35A-H	295485	12/14/2001	Soil		mg/kg	8.1		1	1,520	J	32	27	J	1	1.5	J	0.5
CSB-35A-I	295486	12/14/2001	Soil		mg/kg	5.9		1	11		0.6		U	1		U	0.5
CSB-35A-J	295487	12/14/2001	Soil		mg/kg	4.1		1	11		0.6		U	1		U	0.5
CSB-35A-HD	295488	12/14/2001	Soil	FD of CSB-35A-H	mg/kg	6.5		1	413	J	13	11	J	1	0.75	J	0.5
CSB-26A-A	295489	12/14/2001	Soil		mg/kg	12		1	174		3.2	6.4		1	46		0.5
CSB-26A-B	295490	12/14/2001	Soil		mg/kg	11		1	88		1.3	1.7		1	40		0.5
CSB-26A-C	295491	12/14/2001	Soil		mg/kg	6.4		1	40		0.6	1		1		U	0.5
CSB-26A-D	295492	12/14/2001	Soil		mg/kg	6.2		1	25		0.6		U	1	0.54		0.5
CSB-26A-E	295493	12/14/2001	Soil		mg/kg	5.8		1	23		0.6		U	1		U	0.5
EB-4-121401	295494	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-26A-CD	295495	12/14/2001	Soil	FD of CSB-26A-C	mg/kg	5.5		1	30		0.6	1.5		1	0.53		0.5
CSB-1A-A	295496	12/14/2001	Soil		mg/kg	3.2		1	903		32	3.4		1		U	0.5
CSB-1A-B	295497	12/14/2001	Soil		mg/kg	1.5		1	18		0.6		U	1		U	0.5
CSB-1A-C	295498	12/14/2001	Soil		mg/kg	1.5		1	44		0.6		U	1		U	0.5
CSB-1A-D	295499	12/14/2001	Soil		mg/kg	989		13	249,000		6,250	2,660	J	100	1,000	J	13
CSB-1A-E	295500	12/14/2001	Soil		mg/kg	6.8		1	847		13	16	J	1	1.7		0.5
EB-5-121401	295501	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-1A-DD	295502	12/14/2001	Soil	FD of CSB-1A-D	mg/kg	821		13	185,000		6,250	1,650	J	50	346	J	13
CSB-38A-A	295503	12/14/2001	Soil		mg/kg	67		6.3	6,200		125	156	J	2.5	110		6.3
CSB-38A-B	295504	12/14/2001	Soil		mg/kg	7.9		1	14		0.6		U	1		U	0.5
CSB-38A-C	295505	12/14/2001	Soil		mg/kg	9.3		1	22		0.6		U	1		U	0.5
CSB-38A-D	295506	12/14/2001	Soil		mg/kg	2.5		1	12		0.6		U	1		U	0.5
CSB-38A-E	295507	12/14/2001	Soil		mg/kg	8.6		1	319		6.3	6.2		1	6.8		0.5

RMC BEECHGROVE
Sediment Sampling, 12/13/2001
Trimatrix# 351132-33 Project# 98-478-04

Page 2 of 2

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	RL
R2SB-4A-A	295447	12/13/2001	Sediment		Lead	mg/kg	2,490		63
EB-1-121301	295448	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SB-4A-B	295449	12/13/2001	Sediment		Lead	mg/kg	874		13
R2SB-4A-AD	295450	12/13/2001	Sediment	FD of R2SB-4A-A	Lead	mg/kg	2,320		63
R2SB-4A-C	295451	12/13/2001	Sediment		Lead	mg/kg	1,420		32
R2SB-3A-A	295452	12/13/2001	Sediment		Lead	mg/kg	1,620		32
R2SB-3A-B	295453	12/13/2001	Sediment		Lead	mg/kg	1,410		32
R2SB-3A-C	295454	12/13/2001	Sediment		Lead	mg/kg	1,330		32
EB-2-121301	295455	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SB-2A-A	295456	12/13/2001	Sediment		Lead	mg/kg	918		13
R2SB-2A-B	295457	12/13/2001	Sediment		Lead	mg/kg	4,120		63
R2SB-2A-C	295458	12/13/2001	Sediment		Lead	mg/kg	816		6.3
R2SB-2A-AD	295459	12/13/2001	Sediment	FD of R2SB-2A-A	Lead	mg/kg	996		13
EB-3-121301	295460	12/13/2001	Sediment		Lead	ug/L		U	1
R2SB-1A-A	295461	12/13/2001	Sediment		Lead	mg/kg	2,250		32
R2SB-1A-B	295462	12/13/2001	Sediment		Lead	mg/kg	609		6.3
R2SB-1A-C	295463	12/13/2001	Sediment		Lead	mg/kg	4,230		32
R2SB-1A-CD	295464	12/13/2001	Sediment	FD of R2SB-1A-C	Lead	mg/kg	5,010		63
R2SB-13A-A	295465	12/13/2001	Sediment		Lead	mg/kg	2,910		32
R2SB-13A-B	295466	12/13/2001	Sediment		Lead	mg/kg	24		0.6
R2SB-13A-C	295467	12/13/2001	Sediment		Lead	mg/kg	11		0.6
R2SB-52-A	295468	12/13/2001	Sediment		Lead	mg/kg	300		3.2
R2SB-52-B	295469	12/13/2001	Sediment		Lead	mg/kg	5.7		0.6
EB-5-121301	295470	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SB-52-AD	295471	12/13/2001	Sediment	FD of R2SB-52-A	Lead	mg/kg	338		6.3
R2SB-53-A	295472	12/13/2001	Sediment		Lead	mg/kg	499		6.3
R2SB-53-B	295473	12/13/2001	Sediment		Lead	mg/kg	58		0.6
R2SB-53-BD	295474	12/13/2001	Sediment	FD of R2SB-53-B	Lead	mg/kg	52		0.6
EB-6-121301	295475	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L	2.6		1

[Signature]

4/16/2002



APPENDIX E

Background Calculations and Soil Summary Analysis



Background Calculations and Soil Summary Analysis

The naturally occurring levels of arsenic from the area where the Site is located were evaluated to determine how background compare to the USEPA Region IX industrial soil PRG for arsenic (cancer) of 2.7 mg/kg. Background sampling was conducted to determine a representative range of naturally occurring levels of arsenic. The samples were collected from a portion of the Citizen's Gas property located west of the Site, which is an area that was thought to be unaffected by Site activities. The soil samples were collected from four locations (R2BG-1 through R2BG-4) at two depth intervals; A and B at depths of 0-3 inches and 3-10 inches, respectively. The soil sampling locations are shown in Drawing 4-3.

The background concentrations of arsenic were calculated using the guidance from the RISC Technical Guide, Section 1.6 (IDEM, 2001). Background is the mean plus one standard deviation. The background calculations are provided in detail below. The coefficient of variation (CV) is also calculated ($CV = \text{standard deviation}/\text{mean}$) to determine if additional sampling or other measures were required. If the CV exceeded 1.2 then additional sampling or other measures would be required. As shown below the CV for surface and subsurface were both below 1.2 indicating that the data sets were adequate for determining background.

SURFACE BACKGROUND

R2BG-1A	Arsenic	9.8 mg/kg
R2BG-2A	Arsenic	10 mg/kg
R2BG-3A	Arsenic	6.0 mg/kg
R2BG-4A	Arsenic	3.1 mg/kg

Mean = 7.23 mg/kg

Standard Deviation = 3.31 mg/kg

Coefficient of Variation = 0.46

Surface Background = $7.23 + 3.31 = 10.53$ mg/kg

SUBSURFACE BACKGROUND

R2BG-1B	Arsenic	8.0 mg/kg
R2BG-2B	Arsenic	7.2 mg/kg
R2BG-3B	Arsenic	7.5 mg/kg
R2BG-4B	Arsenic	6.6 mg/kg



Mean = 7.33 mg/kg

Standard Deviation = 0.59 mg/kg

Coefficient of Variation = 0.08

Surface Background = $7.33 + 0.59 = 7.91$ mg/kg

GROUNDWATER BACKGROUND

MW-9	9/22/2001	Total Arsenic	7.7 µg/L
MW-9	12/10/2001	Total Arsenic	4.0 µg/L

Mean = 5.85 µg/L

Standard Deviation = 2.62 µg/L

Coefficient of Variation = 0.45

Groundwater Background = $5.85 + 2.62 = 8.47$ µg/L

The groundwater background concentration for arsenic was calculated using the same technique outlined in the RISC Technical Guide (IDEM, 2001) as the soil background concentrations. With surface and subsurface arsenic background concentrations of 10.53 mg/kg and 7.91 mg/kg, any Site soil with equal or lesser concentrations can be attributed to naturally occurring background levels of arsenic. Any groundwater arsenic concentrations of 8.47 µg/L can also be attributed to naturally occurring background levels of arsenic.

Reference: Indiana Department of Environmental Management (IDEM), February 15, 2001, Risk Integrated System of Closure Technical Resource Guidance Document.

RMC Beech Grove Phase II RFI Soil Data Analysis										
North of CG Property										
	0-3 inch lead			3-10 inch lead			0-3 inch arsenic		3-10 inch arsenic	
location	<400	<1000	>1000	<400	<1000	>1000	<10.5	>10.5	<7.9	>7.9
R2SB-32	286			91			4.9		4.2	
33	202			67			6.3		5.7	
34	170			28			7.1		4.1	
35	191			79			3.7		4.7	
36	310			109			7.8		6.1	
37	366				509		9.2		8	
38	282			175			6.5		5.2	
39	383			144			8.7		7.9	
40		422		50			6.9		4	
41	172			128			5.96		5.9	
42	165			77			4.2		3.9	
43	250			201			7.4		7.4	
44	252			108			7.8		8.5	
45	140			85			7.3		6.2	
46	34			41			6.9		6.5	
47	45			25			6.7		9	
48	41			45			6.5		6.5	
49	47			117			8			9.7
50	34			36			6.9		7	
number of samples	18	1		18	1		19		18	1
arithmetic mean	187.22	422		89.22	509		6.78		6.16	
overall mean		199.58			111.32					
% samples		1.00			1.00		1.00		0.95	0.05

Note:

Citizens Gas samples include 5 locations (R2SB-1 through R2SB-4 and R2SB-13) that were sampled twice.

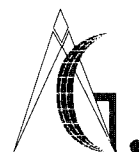
Only one sample from each interval was used in these calculations. Typically, results flagged as estimated (J values) were discarded.

RMC Beech Grove Phase II RFI Soil Data Analysis										
North of CG Property										
	0-3 inch lead			3-10 inch lead			0-3 inch arsenic		3-10 inch arsenic	
location	<400	<1000	>1000	<400	<1000	>1000	<10.5	>10.5	<7.9	>7.9
R2SB-32	286			91			4.9		4.2	
33	202			67			6.3		5.7	
34	170			28			7.1		4.1	
35	191			79			3.7		4.7	
36	310			109			7.8		6.1	
37	366				509		9.2		8	
38	282			175			6.5		5.2	
39	383			144			8.7		7.9	
40		422		50			6.9		4	
41	172			128			5.96		5.9	
42	165			77			4.2		3.9	
43	250			201			7.4		7.4	
44	252			108			7.8		8.5	
45	140			85			7.3		6.2	
46	34			41			6.9		6.5	
47	45			25			6.7		9	
48	41			45			6.5		6.5	
49	47			117			8			9.7
50	34			36			6.9		7	
number of samples	18	1		18	1		19		18	1
arithmetic mean	187.22	422		89.22	509		6.78		6.16	
overall mean		199.58			111.32					
% samples		1.00			1.00		1.00		0.95	0.05

Note:

Citizens Gas samples include 5 locations (R2SB-1 through R2SB-4 and R2SB-13) that were sampled twice.

Only one sample from each interval was used in these calculations. Typically, results flagged as estimated (J values) were discarded.



APPENDIX F

Permeability and Grain Size Analysis Report

Fort Washington, Pa 19034

Job Name: AGC: RMC-Beech Grove (#98-478-04)

Reviewed By ENM

Page No. 1

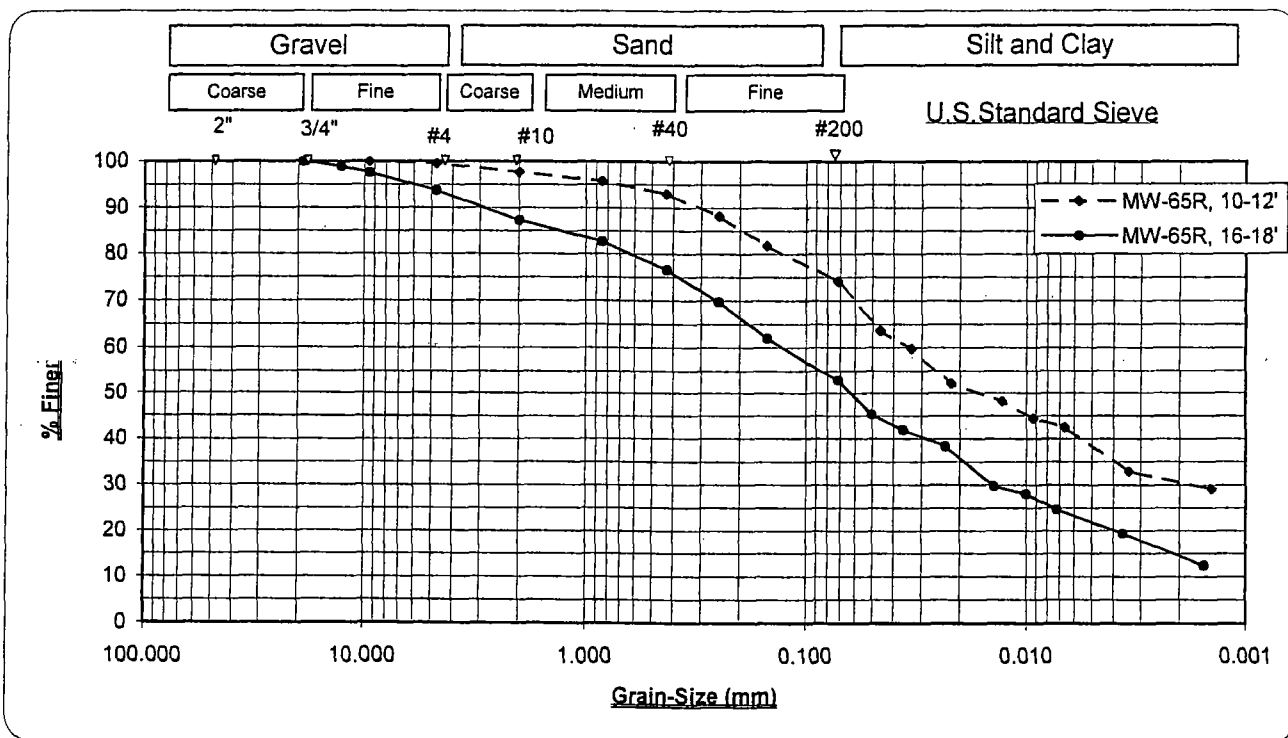
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GeoSystems Consultants Inc.

Fort Washington, Pa.

Job Name: AGC: RMC-Beech Grove (#98-478-04)					File No 2001731mah1			
Job No. 2001g731					Date 12-Sep-01			
					Cu	Undefined	Undefined	Undefined
					C c	Undefined	Undefined	Undefined
Dry Wt.	309.20	424.40	458.10					
Sieve	Weight	Weight	Weight	Sieve	Sieve	%	%	%
No.	Retained	Retained	Retained	No.	Size, mm	Finer	Finer	Finer
Sample No	MW-65R, 10-12'	MW-65R, 16-18'				MW-65R, 10-12'	MW-65R, 16-18'	
3"	0.00	0.00		3"	76.00			
2"	0.00	0.00		2"	50.80			
1.5"	0.00	0.00		1.5"	38.10			
1"	0.00	0.00		1"	25.40			
3/4"	0.00	0.00		3/4"	19.00		100.00	
1/2"	0.00	4.70		1/2"	12.70		98.89	
3/8"	0.00	10.20		3/8"	9.50	100.00	97.60	
#4	1.40	26.70		#4	4.75	99.55	93.71	
#10	7.00	54.00		#10	2.00	97.74	87.28	
#20	1.60	4.20		#20	0.850	95.78	82.69	
#40	3.90	9.80		#40	0.430	92.97	76.58	
#60	7.80	16.10		#60	0.250	88.21	69.71	
#100	13.10	23.20		#100	0.150	81.73	61.97	
#200	19.30	31.60		#200	0.072	74.16	52.80	

ASTMD-422



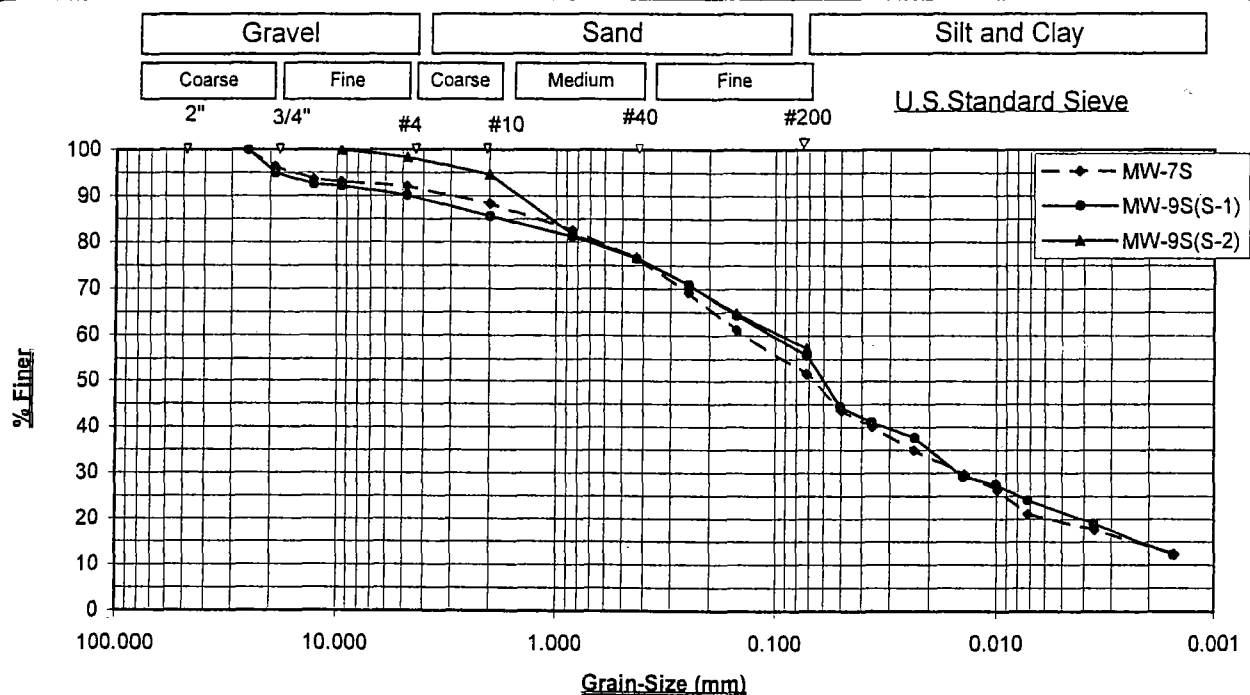
Boring/Sample No.	Depth	Water	LL/PL	Description
	Ft.	Content, %	%	
MW-65R	10-12			Brownish gray silt with sand (ML)
MW-65R	16-18			Light gray sandy silt (ML)

GeoSystems Consultants Inc.

Fort Washington, Pa.

Job Name: AGC: RMC-Beech Grove (#98-478-04)				File No 2001731mah3			
Job No. 2001g731				Date 12-Sep-01			
				Cu	Undefined	Undefined	Undefined
				C c	Undefined	Undefined	Undefined
Dry Wt.	513.00	458.10	463.50				
Sieve	Weight	Weight	Weight	Sieve	Sieve	%	%
No.	Retained	Retained	Retained	No.	Size, mm	Finer	Finer
Sample No	MW-7S	MW-9S(S-1)	MW-9S(S-2)			MW-7S	MW-9S(S-1)
3"	0.00	0.00	0.00	3"	76.00		
2"	0.00	0.00	0.00	2"	50.80		
1.5"	0.00	0.00	0.00	1.5"	38.10		
1"	0.00	0.00	0.00	1"	25.40	100.00	100.00
3/4"	18.86	22.80	0.00	3/4"	19.00	96.32	95.02
1/2"	32.80	34.00	0.00	1/2"	12.70	93.61	92.58
3/8"	35.20	35.70	0.00	3/8"	9.50	93.14	92.21
#4	40.30	45.30	7.50	#4	4.75	92.14	90.11
#10	59.70	65.90	24.90	#10	2.00	88.36	85.61
#20	5.20	4.10	3.70	#20	0.850	82.62	81.23
#40	10.60	8.50	8.20	#40	0.430	76.65	76.52
#60	17.30	13.70	13.70	#60	0.250	69.25	70.95
#100	24.50	19.90	19.50	#100	0.150	61.30	64.32
#200	33.30	27.80	26.40	#200	0.072	51.58	55.86

ASTMD-422



Boring/Sample No.	Depth	Water	LL/PL	Description
	Ft.	Content, %	%	
MW-7S	26-28			Light gray sandy silt (ML)
MW-9S(S-1)	22-24			Light gray sandy silt (ML)
MW-9S(S-2)	24-26			Light gray sandy silt (ML)

GeoSystems Consultants Inc.

Fort Washington , Pa.

Job No: 2001G
 Job Name: AGC; RMC-BEECH GROVE N(#98-478-04)
 Date 9/10/2001
 Reviewed By: E.N.Manuel
 File No.: 2001731LK1

Summary Of Undisturbed Triaxial Variable -Head Permeability Tests **ASTMD-5084**

Date Tested	Test No.	Sample Label	W.Co %	Liquid/ Plastic Limit	Specific Gravity	Dry Density,pcf	So %	$\bar{O}c$ tsf	W.C.f %	Sf %	k cm/sec.
09/08/01	1	MW-65R (10.0'-12.0')	17.0	N.T	2.74	114.7	94.7	0.72	17.9	99.7	4.90E-09
09/08/01	2	MW-65R (16.0-18.0)	10.2	N.T	2.74	133.5	99.3	0.72	10.3	100.0	4.03E-08
	3										
	4	Note: For MW_65R (16.0-18.0), found a 2" to 3" stone in the K sample after test.									
	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										
	13										
	14										
	15										
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	24										
	25										
	26										
	27										
	28										
	29										
	30										
	31										
	32										
	33										

Where:

W.C= Initial or Final Water Content

Yt= Initial Total Density

S = Initial or Final Degree of Saturation

$\bar{O}c$ Effective Consolidation Pressure

K= Coeff.Of Permeability at 20 c

Yd= Initial Dry Density

Note: 1.Initial Hydraulic Gradient Used = 2

N.T- Not Tested



PHASE II RCRA FACILITY INVESTIGATION REPORT

Prepared for:

**REFINED METALS CORPORATION
Beech Grove, Indiana**

Prepared by:

**ADVANCED GEOSERVICES CORP.
Chadds Ford, Pennsylvania**

**Project No. 98-478-03
May 3, 2002**



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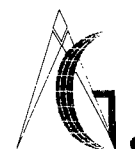
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- B Data Validation Report of Soil Samples Collected August 21-27, 2001
- C Data Validation Report of Groundwater and Soil Samples Collected on September 22 and 24, 2001
- D Data Validation Report of Groundwater and Soil Samples Collected on December 10-14, 2001
- E Background Calculations and Soil Summary Analysis
- F Permeability and Grain Size Analysis Report



1.0 INTRODUCTION

1.1 GENERAL

The Refined Metals Corporation (RMC) facility was the location of secondary lead smelting operations from 1968 through 1995. RMC was involved in the reclamation of lead from used automotive and industrial batteries and other lead bearing materials. The Site ceased smelting operations on December 31, 1995.

During its operational life, the facility handled materials that were classified as hazardous materials or hazardous wastes under the Resource Conservation and Recovery Act (RCRA). At this time, the Site is idle except for the wastewater treatment system which remains in operation. The wastewater treatment system remains in place to collect and treat stormwater runoff from the lined lagoon and other site areas.

1.2 PURPOSE

On July 14, 1998, RMC entered into a Consent Decree with the United States Environmental Protection Agency (USEPA) and the Indiana Department of Environmental Management (IDEM). Under this Consent Decree, a RCRA Facility Investigation (RFI) is to be performed to evaluate and determine the full nature and extent of releases and to collect information necessary to support human health and ecological risk assessments so that a Corrective Measures Study may be implemented. Pursuant to Section VI, Paragraph 42 of the Consent Decree (Compliance Requirements for Corrective Action), Advanced GeoServices Corp. (AGC) has performed the RFI in accordance with the approved RFI work plans on behalf of RMC. The preparation and implementation of the RFI work plans were enacted in accordance with Exhibit B of the Consent Decree and the EPA's RCRA Facility Investigation Guidance Document (EPA 530/SW-89-031). The RFI was conducted in multiple phases. The results from the initial phase of sampling were presented in the Phase I RFI Report dated August 31, 2000. Based on the results of the Phase I RFI



and as required by the EPA after the Phase I RFI Report was submitted, a Phase II RFI Work Plan was submitted to the EPA on December 20, 2000. In response to comments on the Phase II RFI Work Plan issued by the EPA on April 3, 2001, revisions to the Phase II RFI Work Plan were submitted to the EPA on June 27, 2001. The EPA approved the Phase II RFI Work Plan on July 13, 2001. Additional site sampling was conducted during a closure investigation to address three former RCRA-regulated solid waste managements units (SWMUs). The results of the SWMU closure investigation were presented by AGC in the Closure Investigation Report dated June 1, 2001.

This Phase II RFI Report presents a summary of pertinent Phase I RFI activities and details the results of the Phase II investigation conducted from July 2001 through April 2002. The information contained in this report cites the findings of the RFI regarding the presence, magnitude, extent and mobility of hazardous waste and hazardous constituents on and beneath the former site area and adjacent off-site areas that may have originated from the RCRA permitted hazardous waste or solid waste management units at the Site.

In conjunction with the Phase II RFI, additional sampling was conducted as a part of the SWMU Closure Investigation. The results of this sampling are presented under separate cover.

1.3 ORGANIZATION

This document contains a description of the field activities associated with the implementation of the Phase II RFI work plan and the results of the laboratory analysis of the samples collected during the Phase II RFI. This document is organized as follows:

- Section 1.0 - General introduction provided above;
- Section 2.0 - Facility Background, including ownership and operational history as well as a discussion of the nature of contamination;



- Section 3.0 - Site Setting, provides a physical description of the Site including geologic and hydrogeologic characteristics;
- Section 4.0 - Methods and Procedures, details the scope of work conducted as part of the Phase II RFI;
- Section 5.0 - Results, presents the analytical results of the samples collected during the Phase II RFI field activities;
- Section 6.0 - Site Characterization Summary, summarizes the characteristics of site groundwater, soil and sediment with respect to the constituents addressed by the RFI;
- Section 7.0 - Presents the Conclusions that may be drawn from the findings of the RFI; and
- Section 8.0 - Interim Measures.



2.0 FACILITY BACKGROUND

A detailed description of facility background was provided in the Phase I RFI Report. A brief summary is provided herein for those readers not familiar with that report.

2.1 FACILITY LOCATION

The RMC facility is located at 3700 South Arlington Avenue in Marion County, Beech Grove, Indiana, approximately four miles south-southeast of downtown Indianapolis (Figure 2-1). The Site occupies approximately 24 acres, of which approximately 10 acres represented the active manufacturing area (including paved areas and buildings). The remaining 14 acres includes grassed and wooded site areas. The configuration of the Site is triangular, bounded by Arlington Avenue (oriented in a north to south direction representing the hypotenuse), Big Four Road (along the base), and the common property line with a natural gas company forming the third side. The northwest end of the triangle is truncated by a railroad right-of-way (Figure 2-2).

The Site is relatively flat with less than 10 feet of total relief. Natural site drainage is toward the north and east. The former manufacturing area is characterized by nearly 80,000 square feet (sf) of structures. The site plan is illustrated in Figure 2-2.

The ground surface surrounding the buildings is currently paved (primarily with concrete). Older facility photographs indicate that areas northwest and northeast of the main facility structure were unpaved except for a concrete driveway, which encircled the facility. Stormwater runoff is conveyed to the wastewater treatment plant for processing.

2.2 OWNERSHIP HISTORY

The Site was reportedly undeveloped woodlands until 1968. In 1968, the property was developed as a secondary lead smelter by National Lead. National Lead operated the facility from 1968 through



1980, when it was sold to Exide Corporation. In 1985, the Site was purchased from Exide Corporation by RMC. RMC continued to operate the facility until the cessation of operations on December 31, 1995. From April 14, 1995 through December 31, 1995, operations were reduced to enriching and casting lead ingots from off-specification lead products. Since 1996, no production has taken place at the facility except for operation of the wastewater treatment facility, which is still used to treat stormwater runoff from the former manufacturing areas.

2.3 OPERATIONAL HISTORY

2.3.1 Smelting

The facility was constructed as a secondary lead smelter to recycle lead-acid batteries and other lead-bearing wastes. Prior to 1984, battery crushing was performed off-site at other commercial facilities. In 1984, the battery breaker was constructed on-site. One blast furnace and one dust furnace were used at the facility. During operation, the blast furnace used coke and oxygen-enriched air for heating.

Prior to 1984, storage piles were located outdoors with minimal spill and runoff control. The majority of stormwater runoff from the piles and other work areas flowed and/or was pumped to the stormwater lagoon where it was allowed to evaporate. However, when the lagoon was full, it overflowed to a drainage ditch that flowed off-site toward the east. A small portion of the drainage from the active manufacturing area flowed uncontrolled toward the wooded area to the north, and then along an intermittent stream to the north. During 1984, the material storage building was constructed and the waste piles were moved inside. Reportedly, material was occasionally stored outside after 1984 when the material storage building was full.



2.3.2 Refining

Molten lead from the blast furnace was tapped from the bottom of the furnace to kettles in the adjacent refining and casting area. In the kettles, the molten lead was tested to determine its quality. Antimony and tin were either added or removed to create the required lead type and quality. A list of principle materials used on-site is provided on Table 2-1.

2.3.3 Wastewater Treatment

With the installation of the battery crusher in 1984, waste sulfuric acid, and acidic and lead-bearing wastewater was actively collected for treatment through a batch neutralization process. During 1988, the Site was also re-graded and stormwater drainage modified to allow the collection and treatment of all stormwater runoff from the active manufacturing areas. Wastewater effluent is discharged to the Municipal Sanitary Sewer system which conveys the wastewater for treatment at the City of Indianapolis POTW.

2.3.4 Storage Tanks

Reportedly, underground storage tanks (USTs) were never used at the Site. Three above ground storage tanks (ASTs) - two 10,000-gallon ASTs and one 20,000-gallon AST - were used to store diesel fuel for company trucks. The tanks were reportedly cleaned out in 1985 and have since been out of service. The three ASTs are located at the northeast end of the former manufacturing area as shown on Figure 2-2.

A leak in a valve of one of the now out-of-service diesel tanks occurred around 1983, resulting in a spill of unknown volume outside of the containment wall. A portion of the spill flowed along the drainage ditch located north of the refining area. The contaminated soil was excavated and the tanks were emptied. Although documentation of the spill and subsequent response action is not available, the soil clean-up was reportedly conducted under state supervision.



2.4 REGULATORY HISTORY

2.4.1 RCRA

As stated above, following the promulgation of RCRA, the facility submitted a Part A RCRA permit application. On November 19, 1980 the facility was granted Interim Status as a hazardous waste treatment, storage and disposal facility. The RCRA Subtitle C units included indoor and outdoor waste piles (used to store batteries and lead-bearing wastes), and the 750,000-gallon concrete lined lagoon. A Part B application was submitted during the mid-1980s, although full RCRA permitted status was never granted. The EPA maintains that interim status was lost on November 8, 1985 as a result of RMC's alleged failure to comply with Section 3005(e)(2) of RCRA, 42 U.S.C. 6925(e)(2); RMC did not agree with this allegation.

RMC submitted a revised Part A application on October 26, 1988 requesting an increase in the storage volume for spent batteries from 200 cubic yards (cy) to 400 cy. The request was granted on September 20, 1989. A subsequent revised Part A application was submitted to IDEM on December 7, 1990 for increasing the storage volume of spent batteries from 400 cy to 500 cy. IDEM denied the increase. RMC filed for a stay and was granted interim status to store 400 cy, however, IDEM approved the revised Part A application on June 3, 1991 with the provision that it did not grant interim status under RCRA. The Part B application was not resubmitted. In 1994, the facility withdrew its Part A and Part B permit applications.

The following enforcement actions were identified for the facility:

- Notice of Violation April 13, 1982;
- Notice of Violation July 30, 1982;
- Complaint Order (N-283) December 13, 1985;
- Notice of Violation (V-442) February 16, 1987; and
- Letter of Warning March 26, 1987.



EPA filed a complaint in Federal Court against the RMC facility on November 21, 1990. The complaint requested the court to order RMC to cease its operations as a hazardous waste treatment, storage, and disposal facility, to submit a closure plan, prepare and implement a plan to investigate the nature and extent of hazardous waste constituents released from the facility and the effects on groundwater, to prepare a plan for remediation of contamination in and around the facility, and to pay a fine for each violation. The complaint indicates that the EPA had issued a "Determination of Release of Hazardous Waste into the Environment from a RCRA Interim Status Facility" on or about May 5, 1989. Negotiations ensued between RMC and the EPA concerning the deficiencies. A draft Consent Decree was also being negotiated between RMC and the USEPA which was ultimately lodged on July 14, 1998 (Civil Action #IP902077C). This Phase II RFI Report is being submitted under the requirements of that Consent Decree.

2.4.2 CERCLA

A site inspection was performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1980. In 1985, a preliminary assessment was performed under CERCLA. No further action was planned under CERCLA at that time.

2.5 NATURE AND EXTENT OF CONTAMINATION

2.5.1 Behavior Of Lead

A number of the materials formerly used at the facility have toxic characteristics; however, the principal material of concern is lead. Lead is a common metal and can be found at an average concentration in excess of 30 ppm in natural soils and 1-10 µg/l in surface water. Most lead salts are fairly insoluble in water; however, the solubility depends on the pH, with solubility increasing in more acidic conditions. Movement of lead in soils depends on its adsorption, chelation with organic matter, and the precipitation of the less soluble salts. In general, lead reacts with soil anions or clays to form insoluble complexes, inhibiting its mobility. Lead can be ingested or absorbed by



inhalation. Poisoning from acute exposure to lead is uncommon. The primary toxic effects from chronic exposure are on the blood and the nervous system.

2.5.2 Discussion Of Source Areas

Facility inspection reports identified poor housekeeping, storage of materials on unpaved surfaces, spillage in a baghouse, and runoff/runon control for the outdoor waste piles as situations which could aid migration from the paved site area.

Based on the documented operating history and an understanding of the character of lead mobility and transport, the most significant potential sources of contamination at the facility during its operating history were erosion and transport of lead-bearing solids from outdoor waste piles and other areas by stormwater runoff (prior to re-engineering of site drainage to contain all runoff from the manufacturing area), fugitive dust emissions from traffic and production areas, unpaved outdoor waste pile areas (north and west of the material storage building), and stack emissions. Based on original facility grading, transport and deposition of lead-bearing sediment from the facility could have occurred in areas northeast and east of the Battery Breaker building prior to containment of site stormwater runoff. The lined stormwater lagoon and the channels that received lagoon overflow represent potential source areas. In addition, those areas that were either unpaved or not covered by a building within the active manufacturing areas could represent an area where lead contaminated sediment or materials could have accumulated and were subsequently covered with pavement or a structure. The fugitive dust and stack emissions could have resulted in the deposition of lead on the ground surface within and beyond the manufacturing area.

During the preparation of the Phase I RFI Work Plan, AGC performed a review of RMC files to identify previous sampling activities. The file review indicated that previous sampling of environmental media at the facility was limited to an investigation of soils and building interiors performed by Entact, Inc. during April 1996 and quarterly groundwater sampling performed by RMC since June 1991. The groundwater samples were not collected using the low flow sampling

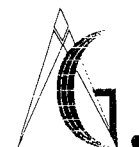


techniques, and potential discrepancies exist between the total and dissolved analytical results (some dissolved concentrations are higher than the total concentrations). Therefore, the data provided by these samples proved to be insufficient in performing an evaluation of the RMC facility. Information and results for the soil samples collected by USEPA, as referenced in the Consent Decree, could not be located.

Floor dust sample results for the warehouse and refining building, collected by Entact, indicated the highest concentration of lead was 129,707 parts per million (ppm). Lead in floor dust samples ranged from 51,702 to 129,707 ppm. Soil samples collected at varying depths beneath the floor slab in the warehouse, refining, and furnace room building had results ranging from non-detect to 2,950 ppm. Floor dust sample results collected from the furnace room, the battery breaker building, and the material storage building indicated lead concentrations ranging from 10,073 to 115,736 ppm. Soil samples collected from varying depths beneath the slab in the material storage building and battery breaker building had lead concentrations ranging from non-detect to 75,373 mg/kg.

Surface soil samples collected from outside of the buildings indicated lead concentrations from 43 mg/kg to 70,406 mg/kg. Subsurface samples of varying depths ranged from non-detect to 22,793 mg/kg. The highest lead concentrations were located within the former active manufacturing areas of the Site.

In addition to the Entact samples, soil samples were reportedly collected and analyzed by the EPA. The samples reportedly failed EP Toxicity tests for lead and cadmium. The date of the sampling and the locations where the soil samples were collected from could not be determined.



3.0 SITE SETTING

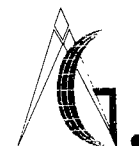
3.1 PHYSICAL SETTING

The Site is located in the White River Drainage Basin. The Site is situated on a minor local topographic high with a surface elevation of approximately 845 feet above mean sea level (msl). The surface elevation slopes gently to the southeast toward Sloan Ditch, and the northwestern perimeter of the Site slopes to the northwest toward the intermittent headwaters of Beech Creek. Surface water at the Site is collected in the stormwater management basin and is treated and discharged to the municipal sewer system.

Prior to construction of the present-day stormwater collection and control system, surface water from the northern portion of the facility flowed to the intermittent stream that flows northwest to the headwaters of Beech Creek. Surface water from other areas on the Site historically flowed to the same location as the present-day (geomembrane lined) stormwater basin, which was reportedly concrete lined. Water collected in this impoundment either evaporated, or when full, overflowed the banks to a drainage ditch that flowed off-site to the east (Figure 2-2) and then to the south, eventually discharging to Sloan Ditch. Sloan Ditch flows 0.6 mile west-southwest to Churchman Creek, which flows to the west 0.9 mile and discharges to Beech Creek. Beech Creek flows 1.2 miles to the southwest to Lick Creek, which then flows 7 miles to the White River.

3.2 REGIONAL GEOLOGY

The surficial geology of Marion County is glacial till (Tipton Till Plain) consisting of yellowish-gray, bluish-gray, or gray sand or silt with some clay and pebbles and scattered cobbles and boulders. The drift cover in Marion County is believed to be composed of three drift sheets resulting from the Kansan, Illinoian, and Wisconsin glaciations. Till thicknesses range from less than 15 feet to greater than 400 feet. The Site is underlain by approximately 200 feet of unconsolidated material.



Bedrock is encountered at an elevation of approximately 640 feet mean sea level (on the order of 200 feet bgs), and consists of middle Devonian-aged dolomitic limestones. The limestones consist primarily of the Geneva Dolomite and the Jefferson Limestone. The Geneva Dolomite is a light gray to tan and buff to chocolate brown dolomite that contains white crystalline calcite masses. The Jeffersonville Limestone is a pure limestone in the upper portion of the formation, and is laminated with organic material in the lower portion. The organic laminae are more argillaceous than the coralline zone (Harrison, 1963). Meyer, 1975 indicates that shale is present beneath the glacial till and overlying the limestones. Additional detail on the shale unit is not provided by Meyer. The regional dip is to the southwest so that progressively younger formations are encountered below the till plain to the southwest.

3.3 REGIONAL HYDROGEOLOGY

In Marion County, groundwater is encountered in un-named sand and gravel beds overlying the bedrock, the Jefferson Limestone and Geneva Dolomite, and the Niagaran Limestones (Harrison, 1963). The sand and gravel glacial outwash that coincides with the courses of the White River and Fall Creek is the aquifer of greatest economic importance in Marion County. The location of this aquifer generally coincides with the glacial melt water and outwash deposits along the major streams. Fall Creek enters White River upstream of the Site. The White River sand and gravel aquifer is located approximately 5.3 miles west of the Site. The sand and gravel aquifer is unconfined and flows toward and discharges to the surface water bodies. The hydraulic conductivity was determined for sand, sand and gravel, and gravel by Meyer, 1975 and are as follows:

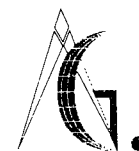


Sand	40 ft/day
Sand and Gravel	240 ft/day
Gravel	415 ft/day

The hydraulic conductivity of the silt and clay was determined to be too low for reporting purposes by Meyer. Specific capacity and lithologic information used in Meyer's hydraulic conductivity calculations of the sand and gravel glacial outwash deposits were obtained from drillers' records.

It is noted by Meyer that three thin, areally discontinuous, sheet-like deposits of sand and gravel in the till-plain area are separated by beds of silt and clay that cause the groundwater in these deposits to be semi-confined. Meyer also notes that large areas of silt and clay often separate one area of an aquifer from another. The elevation of the uppermost semi-confined aquifer beneath the Site was estimated to be approximately 720 ft msl (approximately 120 feet bgs) and is overlain by deposits of varying thickness of silt and clay. Groundwater flow in the uppermost regional semi-confined aquifer is to the northwest. The middle regional semi-confined aquifer is not mapped beneath the Site because an aquitard (clay unit) is mapped in the area. The elevation of the lower regional semi-confined aquifer beneath the Site is approximately 660 ft msl (180 ft bgs) and flow is to the southeast.

The average daily industrial and municipal groundwater pumpage for Marion County is 28.95 million gallons per day (mgpd). Less than 20 percent of the industrial/municipal pumpage is from the bedrock. Also, less than 20 percent of the total pumpage is obtained outside the unconfined glacial-outwash aquifer which occurs only along the White River and Fall Creek and is located at least 5.3 miles west of the Site. The major centers of groundwater pumpage occurred within approximately one mile of a major stream. The estimated total domestic groundwater pumpage is 9.0 to 11.0 mgpd (Meyer 1975).



3.4 SITE SPECIFIC GEOLOGY

Based on results of the RFI activities, the surficial geology at the Site is consistent with the regional geology described in Section 3.2. Four deep borings identified as MW-1D, MW-2D, MW-3D and MW-6D were advanced on-site to depths ranging from 110 feet to 130 feet bgs during the Phase I RFI to characterize subsurface conditions. Borings MW-2D and MW-6D were subsequently converted into monitoring wells as discussed in Section 3.5. From these four borings it was determined that a substantial thickness of unconsolidated silt, clay and fine sands exist beneath the Site. The logs for these four deep borings were included in Appendix A of the Phase I RFI Report. The thickness of the till plain beneath the Site is at least 130 feet as bedrock was not encountered in any of the deep borings.

Various portions of the Site have been altered due to plant operation activities. Several topographic high mounds in the wooded area northeast of the manufacturing area and adjacent to the intermittent stream are believed to be fill material from on-site construction activities. Similarly, paved areas and areas below the structures on-site have been filled with gravel of thicknesses ranging from 6 to 12 inches.

3.5 SITE SPECIFIC HYDROGEOLOGY

Shallow groundwater encountered at the Site is believed to represent a local perched zone of saturation in sand layers within the glacial till. AGC reviewed the logs of the four deep borings advanced during the RFI and the five shallow boring logs advanced prior to installation of site monitoring wells MW-1 through MW-5 in 1991 (see Appendix A). The boring logs indicate that this sand layer varies in thickness and elevation throughout the Site. The potentiometric surface for the groundwater on-site is approximately 10 feet bgs, and flow in the shallow on-site wells appears to be to the southeast. Boring logs for the deep borings on-site indicate that a substantial thickness of silt and clay is deposited below the shallow zone of saturation and overlies the regional uppermost semi-confined water bearing zone. The regional uppermost semi-confined aquifer was not



encountered in any of the deep borings. Two of the deep borings were terminated at a depth of 130 feet bgs, as specified in the Phase I RFI Work Plan.

The deep wells completed on-site for the Phase I RFI (MW-2D and MW-6D) were set in a middle perched zone located 75 to 85 feet below grade. It should be noted that these borings were advanced to 110 and 123 feet below grade, respectively, and did not encounter the regional upper-most semi-confined aquifer. Groundwater sampling results for the middle aquifer indicated a total lead concentration below the EPA Action Level of 15 µg/l in the samples collected during the Phase I RFI. Arsenic was encountered in both wells during both rounds of sampling. Similar to the elevated levels of arsenic in soil in the region, it is believed that the concentrations encountered are representative of regional background levels and not impacts from former facility operations. This middle perched zone was not encountered throughout the entire site and is laterally discontinuous.

Due to the substantial layers of silt and clay combined with the areal discontinuity of the regional uppermost semi-confined aquifer it is believed that there is no direct hydraulic connection between the shallow and middle aquifers and the regional uppermost semi-confined aquifer. Sampling results from the two deep wells completed on-site for the Phase I RFI further support this.



4.0 METHODS AND PROCEDURES

4.1 INTRODUCTION

The Phase II RFI field investigation was developed to address specific recommendations of the Phase I RFI and USEPA comments. Field activities were completed in an effort to achieve the following:

- Further evaluate ground water flow and quality;
- Characterize the soil metal concentrations to the north, east and west of the Site; and,
- Characterize the sediment metal concentrations of the on-site drainage ditch.

Following EPA approval of the Phase II RFI Work Plan, the field activities were completed during two mobilizations. In August 2001, four (4) additional on-site ground water monitoring wells were installed, 22 sediment samples were collected from the on-site drainage ditch and 83 off-site soil samples were collected from the adjacent properties to the north and west. In December 2001, additional sediment samples were collected from five locations in the on-site drainage ditch and eight off-site soil samples were collected on adjacent properties to the east and west. Sampling activities and drilling supervision were conducted by AGC and laboratory analysis was performed by TriMatrix Laboratories Inc. (TriMatrix) of Grand Rapids, Michigan. In addition to the Phase II RFI activities, soil samples were collected from nine on-site geoprobe borings to supplement previous closure investigation activities. Results of the supplemental closure investigation activities are being provided under separate cover to IDEM.

4.2 WELL INSTALLATION ACTIVITIES

4.2.1 Introduction

The four monitoring wells installed during the Phase II RFI were completed in the unconfined aquifer, bringing the total number of monitoring wells completed in this unit to nine. One of these



wells, MW-6SR, was installed to replace MW-6S, which was installed in conjunction with the RCRA Closure Investigation but did not yield a sufficient volume of water to produce a representative groundwater sample. Monitoring wells MW-7 and MW-8 were installed along the northern site boundary, downgradient of the Battery Breaker and Material Storage Building, respectively. The fourth well, MW-9, was installed near the southwest corner of the Site as a background well. Monitoring wells locations are illustrated in Figure 4-1. The depth and final disposition of borings completed on-site is presented in Table 4-1.

Monitoring well MW-6 was abandoned on August 21, 2001. Well abandonment was completed by Boart Longyear Environmental Division of Greensburg, Indiana and consisted of tremie-grouting the well casing from the total depth to the surface using a 95% Portland cement/5% Bentonite grout.

4.2.2 Drilling Methods

The boring were advanced and the wells were installed by Boart Longyear. Borings were advanced using hollow stem auger (HSA) techniques and continuous split spoon samples were collected in accordance with ASTM D 1586.

Continuous sampling for lithology was performed along the entire depth of the borehole. The samples recovered from the advancement of the borings were logged by an AGC geologist. Copies of the logs are provided in Appendix A.

Soil samples were collected during well installation to determine vertical permeability of the aquifer. As described in the Work Plan, the analysis was to have been performed on undisturbed samples collected in Shelby tubes. Two Shelby tube samples were collected from MW-6SR at 10-12 feet bgs and 16-18 feet bgs. No Shelby tube samples were collected from the other three wells because of the formation density. Instead, soil samples were collected from MW-7 (at 26-28 feet) and MW-9 (at 22-24 feet and 24-26 feet). The Shelby tubes and soil samples were submitted to GeoSystems



Consultants Inc. for sieve analysis with hydrometers (all samples), and Atterberg limits and permeability analysis (Shelby tubes only).

4.2.3 Well Construction

The monitoring wells were constructed using 4-inch ID, flush-threaded, Schedule 40 PVC riser with a 10-foot length of factory-slotted 0.010-inch PVC well screen. A sand pack was placed to 2 feet above the top of the monitoring well screen with No. 1 sand. A minimum 2-foot thick bentonite seal was placed on top of the sand pack. The remaining annulus of each borehole was tremie-grouted to the surface using a 95% Portland cement/5% Bentonite grout.

All monitoring wells were completed with a 6-inch square steel protective casing with a locking cap. The protective casing extends from an approximate depth of 3 feet bgs to approximately 2 feet above ground. A neat cement seal was placed around the protective casing to a depth of 3 feet bgs. A 2 foot square well pad was installed so that the surface slopes away from the well.

4.2.4 Well Development

The monitoring wells were developed using the surge-block and pump method. Monitoring wells were first surged using a plunger-type surge block assembly. This provides the necessary turbulence in and near the well screen to remove fine-grained material and to properly develop the well. The wells were then purged and developed using a submersible pump. When the development water in each well was relatively sediment free, exhibited a satisfactory clarity and yield, and pH and specific conductance readings had stabilized as measured in the field, development ceased.



4.3 GROUNDWATER SAMPLING

4.3.1 Well Evacuation

Groundwater samples were collected from site monitoring wells MW-1, MW-2S, MW-3, MW-4, MW-5, MW-6SR, MW-7, MW-8 and MW-9 during two discrete sampling events conducted in September and December 2001. Samples were collected using the low-flow sampling technique to more accurately determine the potential for site-related constituents to have entered groundwater. The depth to water in each monitoring well was measured and the purge volume calculated from these measurements and well specifications from construction logs. This provided the sampling team with an estimate of when stabilization of purging parameters would occur. Monitoring wells were purged and sampled from the suspected least contaminated well to the most contaminated well to minimize the potential for cross-contamination.

The wells were purged using a stainless steel low-flow bladder pump placed at the midpoint of the screen in each well. The wells were purged at a flow rate ranging from 100 to 300 milliliters per minute mls/min, depending on the yield of the well. A flow-through cell was used to measure pH, temperature, conductivity, redox potential, and dissolved oxygen prior to contact with ambient air at 3 to 5 minute intervals during purging. Turbidity was also measured at the same time interval. The wells were purged until the field parameters stabilized to within 10% over three readings and pH readings varied by less than 0.1 unit.

Purge water was contained in 55-gallon drums until analytical results of groundwater samples were evaluated. Drums were labeled with the location and date of generation (i.e., purge water, MW-1, 5/25/96) and remained on-site until disposal. Based on results of the RFI monitoring well sampling, the collected purge water was processed by the site stormwater runoff system.



4.3.2 Sample Collection

Once the field parameters had stabilized, samples were collected directly from the pump discharge line into laboratory-supplied bottles containing the necessary preservatives at a sampling flow rate of 100 to 300 mls/min.

Sample containers were labeled with a unique identifying number, time and date of sample collection, requested analysis, preservative, and the initials of the sample collector. Samples were packed on ice and shipped to TriMatrix Laboratories Inc. for analysis of eight RCRA metals and antimony (SW-846 6010). Samples collected during the September 2001 event were analyzed for total metals content. Samples collected during the December 2001 event, were analyzed for both total and dissolved metals content. Samples for dissolved metals analyses were field filtered through a dedicated disposable Nalgene 0.45 μ m membrane filter immediately after collection and prior to preservation. The sample was decanted into the dedicated, Nalgene disposable filtration unit and filtered under vacuum pressure created by a hand-held pump. The sample was then immediately transferred to a laboratory supplied bottleware.

4.4 SOIL SAMPLING

The following decontamination procedures were followed prior to the collection of each soil sample:

- Wash equipment thoroughly with a non-phosphate detergent (Alconox) and water using a brush to remove any particulate matter or surface film;
- Rinse equipment with distilled water;
- Rinse with diluted 10 % nitric acid;
- Triple rinse with distilled water;
- Air dry equipment; and
- Wrap equipment in a clean plastic sleeve or in aluminum foil if not used immediately.



Soil samples were collected using decontaminated hand augers where asphalt or concrete was not present. For sample locations where either concrete or asphalt existed, a Geoprobe was used to penetrate the pavement and collect the samples. Soil was removed from the auger bucket, or the Geoprobe disposable acetate sleeve, using a disposable scoop. The sample was then homogenized in a stainless steel bowl and placed into a laboratory-supplied jar. The samples were labeled, placed on ice and submitted to TriMatrix for analysis.

4.4.1 Phase I RFI and Closure Investigation Soil Sampling

4.4.1.1 **On-Site Soil Sampling**

During the Phase I RFI, soil samples were collected at a total of 58 on-site locations designated as RSB-1 through RSB-58. Samples were also collected from below the floor slab at a total of 14 locations in the interior of the battery breaker, material storage building, the furnace room and warehouse using a Geoprobe drill rig (RSB-71 through RSB-85). The Phase I RFI soil samples were submitted for analysis of eight RCRA metals (SW-846 6010).

Soil sampling associated with the Closure Investigation included 50 on-site locations that were identified with a "CSB" prefix. Four on-site sampling locations were selected to provide background metal concentration data and were identified with a "BSB" prefix. Samples were obtained using a hand auger or Geoprobe. The soil from the first two feet was analyzed for eight RCRA metals, pH, and antimony (SW-846 6010 and 7470). Samples from below 2 feet were archived. Samples of floor dust and lagoon sediments were also collected.

4.4.1.2 **Off-Site Soil Sampling**

During the Phase I RFI, eight off-site sampling locations were selected on the adjacent properties to the south (the Wavetech property) and northwest (the Citizens Gas Company property). Samples from the Wavetech property were designated as RSB-65 through RSB-68 and samples from the



Citizens Gas property were designated as RSB-63, RSB-64, RSB-69 and RSB-70. These samples were collected using a decontaminated hand auger. Additionally, two locations on the Citizen's Gas Company property were sampled at the 24-30 inch interval. Each of the off-site samples was analyzed for eight RCRA metals (SW-846 6010).

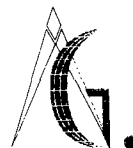
4.4.2 Phase II RFI Soil and Sediment Sampling

4.4.2.1 **On-Site Soil Sampling**

No on-site soil samples were collected a part of the Phase II RFI activities. However, on-site soil samples were collected to supplement previously completed closure investigation activities pursuant to IDEM comments. These results are provided under separate cover to IDEM.

4.4.2.2 **On-Site Sediment Sampling**

In August 2001, sediment samples were collected from 10 locations (R2SED-1 through R2SED-10) along the center line of the drainage ditch adjacent to Arlington Avenue using a decontaminated hand auger. Although the Phase II RFI Work Plan specified collection of 16 samples from the drainage ditch, when sample locations were laid out as specified in the Work Plan (i.e., every 75 feet), only 12 locations were required to cover the specified sampling area. Of these, two locations were not accessible due to construction activities of local Department of Public Works. For reporting purposes samples from the ditch have been designated "sediment." However, physical character of the samples is similar to on-site soils except that they were collected from within a defined drainage ditch. The drainage ditch actually consists of a gently sloping area vegetated with grass that is routinely mowed as a part of the yard area of the facility. Sampling locations are shown on Figure 4-2. Two samples per location were retained for analysis of lead and arsenic content at depths of 0-6 inches and 6-12 inches. The samples were created by mixing the material recovered in these intervals in a stainless steel bowl with a disposable scoop and placing a representative portion into



a laboratory-provided jar. Each jar was labeled and placed on ice in a cooler until delivered for analysis.

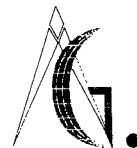
Because the analytical results indicated impact by metals in the deeper interval, additional samples were collected from every other boring (five borings) advanced in the drainage ditch during December 2001. These locations were placed immediately adjacent to R2SED-1, R2SED-3, R2SED-5, R2SED-7 and R2SED-9. Samples were collected as previously described from depths 12-18 inches and 18-24 inches bgs intervals at each location for analysis of lead and arsenic.

4.4.2.3 Off-Site Soil Sampling

During August, soil samples were collected from 45 sampling locations on the Citizens Gas, Americold, Howard and Lyon properties located west and north of the Site. Samples were collected based on a grid pattern with a 200 foot node spacing. The location were identified as R2SB-1 through R2SB-50 with samples collected at depths of 0-3 inches and 3-10 inches for analysis of arsenic and lead. Sample location are shown on Figure 4-3. The samples were created by homogenizing the material recovered from each interval in a stainless steel bowl with a disposable scoop and placing a representative portion into a laboratory-provided jar. Each jar was labeled and place on ice in a cooler until delivered for analysis. No sample was collected from location R2SB-31, which was on a Global Properties parcel where access was denied.

Four additional sampling locations were selected along the western boundary of the Citizens Gas property to establish naturally occurring background concentrations of arsenic. These locations were identified as R2BG-1 through R2BG-4 and are considered to be outside the area affected by the Refined Metals operation. Samples were collected from depths of 0-3 inches (the uppermost soil horizon) and 3-10 inches (the next soil horizon) for analysis as previously described.

Based on analytical results of samples collected in August and background concentrations calculated from those results, five former and two new locations were sampled on the Citizens Gas property,



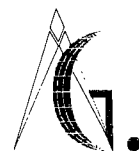
and one location was sample on the Schumanger Machinery property (adjacent to east of the Site across Arlington Avenue) in December. These samples were intended to further arsenic and lead impacts. Samples were collected and handled as previously described. Sampling locations are shown on Figure 4-3. The locations resampled on the Citizens Gas property included R2SB-1, R2SB-2, R2SB-3, R2SB-4 and R2SB-13. Samples were collected at depths of 0-3 inches, 6-9 inches, 12-15 inches and 24-27 inches from boring advanced immediately adjacent to the prior locations and identified as R2SB-1A, R2SB-2A, etc. The new locations on the Citizens Gas property were located approximately 200 feet west of R2SB-20 and R2SB-4 and were identified as R2SB-52 and R2SB-53, respectively. The boring on the Schumanger property was designated as R2SB-51.

4.4.2.4 Off-Site Sediment Sampling

The Phase II RFI Work Plan proposed the collection of sediment samples from six locations within a drainage near the northern property line. The drainage ditch is situated within a right-of-way that formerly belonged to Conrail, which has since been sold to CSX Transportation. AGC attempted to gain access to the right-of-way on multiple occasions, without success. As a result, no sediment samples were collected from these off-site locations.

4.5 SUPPLEMENTAL SURVEY

The Schneider Corporation, an Indiana licensed surveyor, located all soil and sediment sampling locations for the purpose of accurately representing the horizontal datum of the sampling locations in the state-plane coordinate system. In addition, both the existing and the newly installed monitoring wells were surveyed for vertical and horizontal datum in the state-plane coordinate system.



5.0 RESULTS

5.1 INTRODUCTION

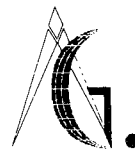
Soil lead concentrations are being delineated to the EPA Region IX preliminary remediation goals (PRGs). As specified in the Phase II RFI Work Plan, arsenic in soil concentrations are being delineated to background concentrations. The calculated background arsenic in soil concentrations are 10.53 mg/kg for surface soil (0-3 inch) and 7.91 mg/kg (>3 inches) for subsurface soils. As stated earlier, samples collected from the drainage ditches have been referred to as "sediment" in this report; however, because of the physical character of the material sampled and geomorphic setting, they are compared to the soil standards discussed above.

As specified in the Phase II RFI Work Plan, groundwater is also being evaluated against a calculated background arsenic level determined using samples collected from MW-9. For arsenic that value is 8.5 µg/l. Background is calculated by the mean arsenic concentration in MW-9 plus one standard of deviation. The current EPA Region IX PRG table does not provide a standard for lead in groundwater; therefore, we are utilizing the EPA Action Level of 15 µg/l. In addition to lead and arsenic Phase II RFI groundwater samples were analyzed for antimony, barium, cadmium, chromium, mercury, selenium and silver, the results of which were compared to the respective EPA Region IX PRGs.

5.2 HYDROGEOLOGIC INVESTIGATION

5.2.1 Phase II RFI Well Installation

During the Phase II RFI, four additional shallow groundwater monitoring wells were installed at the Site, bringing the total number of wells screened across the unconfined aquifer to nine. One of these wells, MW-6SR, replaced MW-6S, which was installed during the Phase I RFI but was unable to yield a sufficient volume of water to produce a representative ground water sample. The locations



of the other three wells, MW-7, MW-8, and MW-9, are shown on Figure 4-1. MW-9 is intended to represent background.

5.2.2 Phase II RFI Groundwater Quality

Two rounds of ground water samples were collected from the nine shallow monitoring wells during the Phase II RFI for analysis of eight RCRA metals and antimony. Each sampling event was preceded by the collection of static water level measurements from each well. These measurements recorded the depth to water below a surveyed point on the top of each well casing. The wells were purged and sampled using the low-flow sampling technique during September and December, 2001. Samples from the September sampling event were analyzed for total metals concentrations. The samples from the December sampling event were analyzed for both total and dissolved (filtered) concentrations. Analytical results from the sampling events are summarized on Table 5-1.

5.2.2.1 **September 2001 Sampling Event**

The analytical results and Validation Report for samples collected during the September 2001 groundwater sampling event are included in Appendix B. A potentiometric surface map prepared from the September static water level data is presented as Figure 5-1. The water table elevation for MW-6SR appears to be anomalous. This data point was excluded in the preparation of the map.

Total arsenic was found in concentrations ranging from BDL (1.0) $\mu\text{g/l}$ in MW-4 to 33 $\mu\text{g/l}$ in MW-1. Arsenic concentrations were detected above the background concentration in MW-1, MW-2, and MW-3 and MW-7 at 33 $\mu\text{g/l}$, 12 $\mu\text{g/l}$, 9.7 $\mu\text{g/l}$, and 25 $\mu\text{g/l}$, respectively. Total lead was detected above the USEPA Action Level value of 15 $\mu\text{g/l}$ in MW-2, MW-7 and MW-8 at 49 $\mu\text{g/l}$, 19 $\mu\text{g/l}$, and 21 $\mu\text{g/l}$, respectively. The samples from the other wells were reported to contain lead at concentrations ranging from BDL (<1 $\mu\text{g/l}$) in MW-4 and MW-6 to 5.9 $\mu\text{g/l}$ in MW-1. No other targeted analyte was reported above the EPA Region IX PRG value.



5.2.2.2 December 2001 Sampling Event

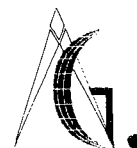
The analytical results and Validation Report for samples collected during the December 2001 groundwater sampling event are included in Appendix C. A potentiometric surface map prepared from the December 2001 static water level data is presented as Figure 5-2. The water table elevation measurement for MW-6SR appears to be anomalous. This data point was excluded in the preparation of the map.

During the December event, two separate sets of samples were collected. One set of samples was field-filtered with a 45 micron filter for analysis of dissolved metals. This was done to determine if total metal concentrations detected during the September 2001 sampling event and those to be detected during the December 2001 sampling event were representative of actual groundwater conditions. Field filtering reduces the possibility of artificially high metals concentrations.

Total arsenic was found at concentrations ranging from BDL (1.0 µg/l) in MW-4 to 27 µg/l in MW-1. Total arsenic concentrations were detected above the background concentration in MW-1, MW-2, MW-3, MW-7, and MW-8 at 27 µg/l, 12 µg/l, 11 µg/l, 26 µg/l, and 13 µg/l, respectively. Dissolved arsenic was found at concentrations from BDL in MW-4 to 30 µg/l in MW-7. Dissolved arsenic concentrations were detected above the background concentration in MW-1, MW-2, MW-7, and MW-8 at 22 µg/l, 9.8 µg/l, 30 µg/l, and 14 µg/l, respectively. Total lead was reported at concentrations ranging from BDL (MW-3 and MW-9) to 84 µg/l in MW-2. Total lead was detected above the Action Level at concentrations of 84 µg/l, 47 µg/l and 23 µg/l in the samples from MW-2, MW-7, and MW-8, respectively. Dissolved lead was not found above the USEPA Action Level. No other targeted analyte was reported above the EPA Region IX PRG of the collected samples.

5.2.3 Permeability Analysis

The laboratory report from GeoSystems is included in Appendix G. The sieve analysis identified all samples as sandy silt or silt with sand (USCS Class ML). The vertical coefficient of permeability



calculated from Triaxial Variable Head Permeability Test was 4.90×10^{-9} cm/sec from MW-6SR 10-12 feet and 4.03×10^{-8} cm/sec for MW-6SR 16-18 feet. Undisturbed samples could not be collected from MW-7 and MW-9 because of material characteristics therefore samples were collected for grain size analysis. The grain distribution curves for the samples from MW-7 and MW-9 were very similar to the MW-6SR 16-18 sample and would be expected to have similar permeabilities.

5.3 SOIL INVESTIGATION

5.3.1 On-Site Soil Results

The analytical results and Validation Report for the on-site soil samples collected and analyzed to supplement previously completed Closure Investigation activities will be provided under separate cover to IDEM. Results of on-site soil sampling performed as part of the Phase I RFI are provided on Figure 4-3.

5.3.2 On-Site Sediment Results

The analytical results and Validation Report for the sediment samples collected from the ditch along East Arlington Avenue are included in Appendix E. The data are summarized on Table 5-3 and included on Figure 4-2. All samples with an "A" suffix indicate they were collected in the 0-6 inch interval. Concentrations of lead in the 0 to 6 inch horizon ranged from 84 mg/kg at R2SED-10 to 8,430 mg/kg in R2SED-6. Lead exceeded the EPA Region IX PRG for non-residential soils at 9 out of 10 sample locations at this depth. Concentrations of arsenic ranged from 9.4 mg/kg in R2SED-10 to 46 mg/kg in R2SED-5 at this depth. Arsenic exceed background soil concentrations at 7 out of 10 locations.

All samples with an "B" suffix indicate they were collected in the 6-12 inch interval. Concentrations of lead ranged from 25 mg/kg at R2SED-10 to 6,020 mg/kg in R2SED-3 with 7 out of 10 samples from this depth exceeding the EPA Region IX PRG for non-residential soil. Concentrations of



arsenic ranged from 7.2 mg/kg in R2SED-10 to 35 mg/kg in R2SED-6 with 9 out of 10 exceeding the background soil concentration.

All samples with an "C" suffix indicate they were collected in the 12-18 inch interval. Concentrations of lead ranged from 19 mg/kg at R2SED-1 to 622 mg/kg in R2SED-3 and none of the samples from this depth exceeded the EPA Region IX PRG for soil. Concentrations of arsenic ranged from 5.7 mg/kg in R2SED-5 to 13 mg/kg in R2SED-3 and R2SED-7 at this depth and 4 out of 5 samples exceeded the background concentration for arsenic.

All samples with an "D" suffix indicate they were collected in the 18-24 inch interval. Concentrations of lead ranged from 20 mg/kg at R2SED-5 to 691 mg/kg in R2SED-3 and none of the samples from this depth exceeded the EPA Region IX PRG for soil. Concentrations of arsenic ranged from 5.5 mg/kg in R2SED-1 to 12 mg/kg in R2SED-3 at this depth and 3 out of 5 samples exceeded the background concentration for arsenic.

5.3.3 Off-Site Soil Results

The analytical results and Validation Report for the off-site soil samples collected and analyzed for lead and arsenic are included in Appendix D. The data are summarized on Table 5-2 and presented on Figure 4-3. Samples with an "A" suffix were collected in the 0-3 inch interval. Samples with an "B" suffix were collected in either the 3-10 inch or 6-9 inch interval as indicated on Table 5-3. Samples with an "C" suffix were collected in the 12-15 inch interval. Samples with an "D" suffix were collected in the 24-27 inch interval and held as archive samples. Based on the results of the "C" interval samples, none of the "D" interval samples were analyzed.

Samples from locations R2BG-1 through R2BG-4 were collected on the Citizens Gas property from the 0-3 inch (surface) and 3-10 inch (subsurface) intervals to determine background arsenic concentrations. Based on the results of these samples, arsenic background concentrations of 10.53



mg/kg for surface soil (0-3 inch) and 7.91 mg/kg for subsurface (>3 inch) soil were calculated. The calculations for these values is included in Appendix F.

Samples collected on the Citizens Gas property included 26 locations for lead and arsenic characterization (R2SB-1 through R2SB-24, R2SB-52 and R2SB-53). Lead concentrations in the 0-3 inch interval ranged from 25 mg/kg in R2SB-10 to 7,390 mg/kg in R2SB-13. Twenty of 26 samples (77%) had lead concentrations below the 1,000 mg/kg USEPA non-residential PRG. The average concentration of these 20 samples was 393 mg/kg. Arsenic concentrations in the 0-3 inch interval ranged from 4.6 mg/kg in R2SB-52 to 141 mg/kg in R2SB-1. Twelve of 26 samples (46%) of the samples from this interval had arsenic concentrations below the calculated background surface concentration of 10.53 mg/kg. The average concentration of these 12 samples was 8.52 mg/kg.

Lead concentrations in the 3-10 inch interval ranged from 5.7 mg/kg in R2SB-52 to 4,120 mg/kg in R2SB-2. Twenty-three of the 26 samples (88%) from this interval had lead concentrations below 1,000 mg/kg. These 23 samples has an average concentration of 150.2 mg/kg. Arsenic concentrations in the 3-10 inch interval ranged from 3.3 mg/kg in R2SB-52 and R2SB-53 to 50 mg/kg in R2SB-1. Eight of the 26 samples (31%) of the samples from this interval had arsenic concentrations below the calculated background subsurface concentration of 7.91 mg/kg. These samples have an average concentration of 5.11 mg/kg. A data summary and calculations are provided in Appendix F.

Samples from the 12-15 inch interval were submitted for analysis from locations R2SB-1 through R2SB-4 and R2SB-13. Lead concentrations in this interval exceeded 1,000 mg/kg in R2SB-1, R2SB-3 and R2SB-4. Arsenic concentrations in the samples from this interval exceeded the subsurface background concentration of 7.91 mg/kg in R2SB-1 (8.3 mg/kg) and R2SB-4 (18 mg/kg).



Nineteen locations were sampled on the adjacent properties to the north of the Site for lead and arsenic characterization. Lead concentrations in the 0-3 inch interval ranged from 34 mg/kg in R2SB-46 and R2SB-50 to 422 mg/kg in R2SB-40, with an average concentration of 199.6 mg/kg. None of these samples exceeded 1,000 ppm lead. Arsenic concentrations in this interval ranged from 3.7 mg/kg in R2SB-35 to 9.2 mg/kg in R2SB-37, with an average concentration of 6.8 mg/kg. None of these samples exceeded the background concentration. Lead concentrations in the 3-10 inch interval ranged from 24 mg/kg in R2SB-47 to 509 mg/kg in R2SB-37, with an average concentration of 111.3 mg/kg. None of these samples exceeded 1,000 ppm lead. Arsenic concentrations in this interval ranged from 3.9 mg/kg in R2SB-42 to 9.7 mg/kg, in R2SB-49, with an average concentration of 6.3 mg/kg. Four of these samples slightly exceeded the background concentration.

One location, R2SB-51, was sampled east of the Site, across Arlington Avenue. Samples were analyzed for lead and arsenic from the 0-3 inch and 6-9 inch intervals. Lead concentrations of 285 mg/kg and 199 mg/kg and arsenic concentrations of 6.6 mg/kg and 7 mg/kg, respectively, were detected in these intervals.



6.0 SITE CHARACTERIZATION SUMMARY

6.1 GROUNDWATER

Groundwater is encountered on-site at approximately 10 feet (shallow groundwater) and 75 feet bgs (middle perched zone). Figures 5-1 and 5-2 display the potentiometric surface for shallow groundwater based upon data collected during the September and December 2001 groundwater sampling events. Groundwater flow in shallow groundwater appears to be to the southeast. Boring logs for the deep borings on-site indicate that a substantial thickness of silt and clay is deposited below the shallow and middle perched zones of saturation and overlies the regional uppermost semi-confined water bearing zone. The regional uppermost semi-confined aquifer was not encountered in any of the deep borings, which were terminated at a depth of 130 feet bgs, as specified in the Phase I RFI Work Plan. As noted by Meyer (1975), the three semi-confined aquifers are not aerally continuous throughout the county and sections of them are often divided by large areas of silt and clay. Consequently, it is noted that in some portions of the County, all of the aquifers may not be encountered.

The hydraulic conductivity in these regional silt and clay deposits is low (less than 1×10^{-7} centimeters per second) makes these deposits semi-pervious. Consequently, the shallow groundwater on the Site is a perched zone that extends aerally across the Site, and the underlying thick layers of clays and silts serve to restrict infiltration to the regional semi-confined water bearing zone, where it is present. The middle perched zone appears to be less continuous across the Site.

During the Phase I RFI, groundwater was collected from both the shallow and deep wells during two separate sampling events. A low yield from MW-6S prevented the collection of a representative sample and the well was replaced by MW-6SR during the Phase II RFI. The analytical results from the Phase I RFI sampling events did not indicate groundwater impact to the deep wells at concentrations above the USEPA Action Level for lead. Arsenic was detected above the background concentration (for the shallow aquifer) in both deep wells. Total lead was detected above the Action



Level of 15 µg/l in one of the shallow wells (MW-2). Arsenic was detected above the background concentration in four shallow wells during the Phase I RFI.

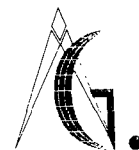
During the Phase II RFI, groundwater was collected from the shallow wells on-site during two sampling events in September and December 2001. The current EPA Region IX PRG table does not include a value for lead in groundwater. Therefore the USEPA Action Level of 15 µg/l was used as the comparison criteria for groundwater results in the Phase II RFI. Total lead was detected at concentrations above the Action Level in MW-2, MW-7 and MW-8 during both events. During the December event, a second set of samples was collected and field-filtered to evaluate if entrained soil in the unfiltered samples was affecting the analytical results. The results of the field-filtered samples were below the Action Level indicating increasing turbidity measurements recorded during purging is likely causing elevated lead results in the samples collected from these wells. Lead was not detected in the other shallow or deep on-site wells at levels above the Action Level.

Arsenic was detected above the background concentration in MW-1, MW-2, MW-3, and MW-7 during both sampling events, and in MW-8 during the December event. Field filtering during the December event generally lowered the reported concentrations but not below the background concentration, except in MW-3.

6.2 SOIL

6.2.1 On-Site Soil

Samples were collected from 58 locations during the Phase I RFI at depths varying from 0 to 30 inches. Elevated concentrations of lead and arsenic were reported in areas in and around the former manufacturing areas above the applicable PRG and background criteria. Additional on-site sampling was not deemed necessary during the Phase II RFI because sampling to date has adequately defined on-site soil addressed as part of the RFI.



6.2.2 Off-Site Soil

During the Phase I RFI, soil samples were collected from four locations on the Wavetech property located to the south of the Site at 0-3 inch and 3-10 inch intervals. Concentrations of lead above the EPA Region IX PRG were not detected in any of these samples. Arsenic was not reported above the calculated background concentration except in the 3-10 inch sample from RSB-66. The arsenic concentration in this sample was 8.1 mg/kg versus the background value of 7.91.

Soil samples were collected from 19 locations on the properties to the north and east of the Site during the Phase II RFI. Concentrations of lead did not exceed the EPA Region IX PRG in these samples. Arsenic slightly exceeded background concentrations in four of these samples.

Soil samples were collected from 26 locations on the Citizen's Gas property located to the west of the Site at 0-3 inch and 3-10 inch intervals, with five of the locations also sampled at a depth of 12-15 inches. During the Phase II RFI, lead was detected above the EPA Region IX PRG at locations along the western site boundary and adjacent to the drainage swale along the southern boundary of the Citizens Gas property that abuts Big Four Road.

6.2.3 On-Site Sediment

Sediment samples collected from the drainage ditch along Arlington Avenue indicate concentrations of lead above the PRG for lead in soil to a depth of 12 inches. Concentrations of arsenic above the calculated subsurface background concentrations were detected in the deepest sample at seven of the ten sediment sampling locations.



7.0 CONCLUSIONS

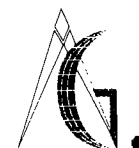
The following conclusions can be drawn from the findings of the RFI.

Groundwater

- Groundwater flow in the shallow zone of saturation on-site appears to be generally toward the southeast.
- The detection of lead at concentrations above the Action Level by the total metals analysis appears to be the result of entrained soil in the sample. Field-filtering prior to sample preservation and analysis of dissolved concentrations yields lead values below the Action Level. Field-filtering did not generally reduce arsenic concentrations to below the background concentration of 8.5 µg/l except in MW-3.
- Arsenic values detected in the groundwater were above the background values calculated from MW-9 but are believed to more representative of regional background than impacts from previous site operations. This conclusion is supported by the low variability in arsenic concentrations reported in the shallow and perched aquifers, as well as the soil permeabilities reported by the Triaxial tests and estimated from the sieve analysis.

Soil

- Areas of metals-affected soil have been identified and delineated on the Site. Lead appears to be the primary COC.
- Arsenic and lead affected soil has also been identified and largely delineated to be within the site boundaries to below both applicable PRGs and/or background



concentrations. Some affected soil along the common boundary with Citizens Gas and along Arlington Avenue corresponds to drainage features that may have been caused by overland flow during storm events.



8.0 INTERIM MEASURES

The interim measures discussed in the Work Plan submittal with the Phase II RFI Work Plan were implemented during the September 2001 sampling events and remain in place.



TABLES



TABLE 2-1

**Principle Materials Used On-Site
Refined Metals Facility
Beech Grove, Indiana**

<u>Material</u>	<u>Use</u>
Lead batteries and scrap metal	Raw material for refining
Coke	Furnace fuel
Oxygen	Furnace oxidant
Natural gas	Furnace fuel
Antimony and tin	Alloys added to lead
Sodium hydroxide	Removal of antimony and tin in refining kettles
Red phosphorus	Removal of copper from refining kettles
Scrap iron	Furnace additive to remove sulfur
Magnesium hydroxide	Wastewater neutralization and flocculent
Polymers and chelating agents	Wastewater treatment
Muriatic (hydrochloric) acid	Cleaning wastewater filter press
Lime and sodium bicarbonate	Neutralizing spills

TABLE 4-1
RMC - BEECH GROVE PHASE II RFI
Monitoring Well Construction Details

Well ID	Installation Date	Installation Method	Inner Casing Diameter (in.)	Outer Casing Diameter (in.)/Depth (ft.bgs)	Total Depth (ft. bgs)	Depth To Water (ft. bgs) ¹	Ground Surface Elevation (ft.) ^{2,3,4}	TOIC Elevation (ft.)	Screen Interval (ft.)	Comments
1	10/11/90	Auger	2	10/30	30.5	9.46	845.62	846.99	20-30	
2	10/11/90	Auger	2	10/30	30.5	8.61	845.73	846.9	20-30	
2D	8/12/99	HSA, Roto-Sonic	4	6/80.0	110	21.04	845.91	N/A	70-80	
3	10/17/90	Auger	2	10/21	21.5	11.42	846.44	848.06	11-21	
4	10/15/90	Auger	2	10/22	26	5.61	837.57	839.02	12/22	
5	10/12/90	Auger	2	10/25	25.5	3.46	839.65	840.84	15-25	
6S	8/12/99	HAS	2	6/17.0	31	10.98	843.73	N/A	7-17	Abandoned
6D	8/12/99	HSA, Roto-Sonic	4	6/96.0	123	11.03	843.82	N/A	87-97	
6SR	8/21/01	HSA	4	6/20	30	19.19	842.833	845.25	20-30	
7	8/22/01	HSA	4	6/15	28	6.35	845.087	844.61	25-15	
8	8/21/01	HSA	4	6/20	30.5	8.37	843.805	843.55	20-30	
9	8/22/01	HSA	4	6/15	26	9.37	844.471	846.87	25-15	

Notes:

1. Depth to Water taken during September 2001, except 6S (Sept 1999).
2. MW-1 through 5 Ground Surface Elevations taken from 8/6/99 Schneider survey.
3. MW-2D, 4, 6S, 6D GSE taken from 10/7/99 Schneider survey.
4. MW-7S, 8S, and 9 GSE taken from 9/18/01 Schneider survey.

ft. bgs - feet below ground surface

HSA - hollow stem auger

in - inches

N/A - not available



TABLE 5-1
RMC BEECH GROVE PHASE II RFI
Groundwater Analytical Results

Sample Location		MW-1						MW-2						MW-3						MW-4						MW-5					
Sample Date		9/22/2001			12/10/2001			9/22/2001			12/10/2001			9/22/2001			12/11/2001			9/24/2001			12/11/2001			9/24/2001			12/11/2001		
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																															
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	33		1	27		1	12		1	12		1	9.7		1	11		1		U	1		U	1	7.6		1	5.4		1
Barium	ug/L	101		10	93		10	31		10	48		10	102		10	98		10	197		10	187		10	170		10	150		10
Cadmium	ug/L	0.2		0.2		U	0.2	0.3		0.2	0.4		0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L	3.1		1	4		1		U	1	4.8		1		U	1		U	1		U	1		U	1		U	1		U	1
Lead	ug/L	5.9		1	3.4		1	49		1	84		1	1.3		1		U	1		U	1	1.5		1	2		1	2.1		1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L	6.1	J	2	4		2		U	2	3.1		2		U	2	3.7		2		U	2		U	2		U	2		U	2
Silver	ug/L		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2
Dissolved Metals																															
Antimony	ug/L		NA			U	10		NA			U	10		NA			U	10		NA			U	10		NA			U	10
Arsenic	ug/L		NA		22	J	1		NA		9.8	J	1		NA		8.4	J	1		NA			UJ	1		NA		3.7	J	1
Barium	ug/L		NA		85		10		NA		25		10		NA		113		10		NA		203		10		NA		170		10
Cadmium	ug/L		NA			U	0.2		NA			U	0.2		NA			U	0.2		NA			U	0.2		NA			U	0.2
Chromium	ug/L		NA		8.9	J	1		NA		6.8	J	1		NA		6.6	J	1		NA		3.4	J	1		NA		4	J	1
Lead	ug/L		NA			U	1		NA		6.2		1		NA			U	1		NA			U	1		NA			U	1
Selenium	ug/L		NA		4.9	J	2		NA		3.7	J	2		NA		3.7	J	2		NA			UJ	2		NA			UJ	2

Sample Location		MW-6						MW-7						MW-8						MW-9					
Sample Date		9/24/2001			12/11/2001			9/22/2001			12/11/2001			9/22/2001			12/11/2001			9/22/2001			12/10/2001		
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																									
Antimony	ug/L		U	10		U	10		U	10		U	10	14		10		U	10		U	10		U	10
Arsenic	ug/L	1.9		1	2.2		1	25		1	26		1	5.1		1	13		1	7.7		1	4		1
Barium	ug/L	92		10	79		10	21		10	25		10	133		10	123		10	137		10	68		10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2	0.8		0.2	0.4		0.2		U	0.2		U	0.2
Chromium	ug/L		U	1		U	1		U	1	2.8		1		U	1		U	1		U	1	2.2		1
Lead	ug/L		U	1	1.3		1	19		1	47		1	21		1	23		1	1.6		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2		U	2	3.7	J	2	5.7		2		U	2		U	2		U	2		U	2
Silver	ug/L		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2		UJ	0.2		U	0.2
Dissolved Metals																									
Antimony	ug/L		NA			U	10		NA			U	10		NA			U	10		NA			U	10
Arsenic	ug/L		NA		1.4	J	1		NA		30	J	1		NA		14	J	1		NA		3.7	J	1
Barium	ug/L		NA		89		10		NA		23		10		NA		135		10		NA		68		10
Cadmium	ug/L		NA			U	0.2		NA			U	0.2		NA		0.3		0.2		NA			U	0.2
Chromium	ug/L		NA		3.8	J	1		NA		13	J	1		NA		3.8	J	1		NA		3.8	J	1
Lead	ug/L		NA			U	1		NA		2.5		1		NA		11		1		NA			U	1
Selenium	ug/L		NA			UJ	2		NA		6.5	J	2		NA			UJ	2		NA			UJ	2

Notes:
Q - Qualifier
RL - Reporting Limit
U - Undetected
J - Estimated
FD - Field Duplicate
NA - Not Analyzed

TABLE 5-2
RMC - BEECH GROVE CLOSURE INVESTIGATION
Soil Analytical Results

Sample Location	Lab ID	Depth	Sample Date	Antimony			Arsenic			Cadmium			Lead		
				Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
CSB-1A-A	295496	0-3"	12/14/01	3.4		1	3.2		1			0.5	903		32
CSB-1A-B	295497	6-9"	12/14/01			1	1.5		1			0.5	18		0.6
CSB-1A-C	295498	12-15"	12/14/01			1	1.5		1			0.5	44		0.6
CSB-1A-D	295499	24-27"	12/14/01	2660	J	100	989		13	1000	J	13	249000		6250
CSB-1A-E	295500	36-39"	12/14/01	16	J	1	6.8		1	1.7		0.5	847		13
CSB-1A-F	297370	48-51"	12/14/01	1.7		1	8.5		1	2		0.5	170		2.5
CSB-1A-G	297371	60-63"	12/14/01	1.6		1	5.6		1			0.5	65		1
CSB-1A-H	297372	72-75"	12/14/01	2		1	6		1			0.5	82		1
CSB-1A-I	297373	84-87"	12/14/01	1.4		1	5.7		1			0.5	47		0.6
CSB-1A-J	297374	96-99"	12/14/01	3.6		1	5.7		1			0.5	144		2.5
CSB-10A-A	295526	0-3"	12/14/01	5.7	J	1	4.5		1	0.59		0.5	1780		63
CSB-10A-B	295527	6-9"	12/14/01	31	J	1	6.1		1	1.3		0.5	1210		32
CSB-10A-C	295528	12-15"	12/14/01	1720		50	433		6.25	132		0.625	256000	J	6250
CSB-10A-D	295531	24-27"	12/14/01	4260		100	2730		63	527		6.3	475000		12500
CSB-10A-E	295532	36-39"	12/14/01	6.7		1	7.1	J	1	0.61		0.5	253		6.3
CSB-10A-F	297375	48-51"	12/14/01	2960		50	1700		50	363		5	288000		5000
CSB-10A-G	297376	60-63"	12/14/01	12		1	28		1	7.2		0.5	1090		25
CSB-10A-H	297377	72-75"	12/14/01	1.8		1	11		1	5.1		0.5	101	J	2.5
CSB-10A-I	297379	84-87"	12/14/01	6.1		1	44		1	20		0.5	365		5
CSB-13A-A	295508	0-3"	12/14/01	80		5	11		1	64		1.3	2300		63
CSB-13A-B	295509	6-9"	12/14/01	197		5	22		1	29		0.5	1070		13
CSB-13A-C	295510	12-15"	12/14/01	5		1	6.6		1	36		0.5	75		1.3
CSB-13A-D	295511	24-27"	12/14/01	1.9		1	5.9		1	1.7		0.5	39		0.6
CSB-13A-E	295512	36-39"	12/14/01	2.9	J	1	6		1	0.99		0.5	27		0.6
CSB-26A-A	295489	0-3"	12/14/01	6.4		1	12		1	46		0.5	174		3.2
CSB-26A-B	295490	6-9"	12/14/01	1.7		1	11		1	40		0.5	88		1.3
CSB-26A-C	295491	12-15"	12/14/01	1		1	6.4		1		U	0.5	40		0.6
CSB-26A-D	295492	24-27"	12/14/01		U	1	6.2		1	0.54		0.5	25		0.6
CSB-26A-E	295493	36-39"	12/14/01		U	1	5.8		1		U	0.5	23		0.6
CSB-28A-A	295514	0-3"	12/14/01	5		1	53		1	17		0.5	30		0.6
CSB-28A-B	295515	6-9"	12/14/01		U	1	5.1		1		U	0.5	13		0.6
CSB-28A-C	295516	12-15"	12/14/01		U	1	7.9		1		U	0.5	27	J	0.6
CSB-28A-D	295517	24-27"	12/14/01		U	1	6.5		1		U	0.5	14		0.6
CSB-28A-E	295518	36-39"	12/14/01		U	1	9.4		1		U	0.5	16		0.6
CSB-30A-A	295520	0-3"	12/14/01	63		2.5	30		1	4.2		0.5	2360		63
CSB-30A-B	295521	6-9"	12/14/01	14		1	13		1	1.3		0.5	366		6.3
CSB-30A-C	295523	12-15"	12/14/01	7	J	1	9.1	J	1	0.83		0.5	243		6.3
CSB-30A-D	295524	24-27"	12/14/01	1.2		1	6.6		1		U	0.5	32		0.6
CSB-30A-E	295525	36-39"	12/14/01		U	1	6.6	J	1		U	0.5	13		0.6
CSB-32A-A	295533	0-3"	12/14/01	2190	J	100	394		6.3	158		6.3	164000		6250
CSB-32A-B	295534	6-9"	12/14/01	1060		50	199		3.2	47		3.2	90100		3130
CSB-32A-C	295535	12-15"	12/14/01	1010	J	25	230		3.2	38		3.2	64000		6250
CSB-32A-D	295536	24-27"	12/14/01	2.7		1	8	J	1		U	0.5	40		0.6
CSB-32A-E	295537	36-39"	12/14/01	1.5		1	6.5	J	1		U	0.5	20	U	0.6
CSB-35A-A	295478	0-3"	12/14/01	1280		25	154		6.3	83		3.2	70400		1250
CSB-35A-B	295479	6-9"	12/14/01	5.3		1	6.1		1	0.66		0.5	279		6.3
CSB-35A-C	295480	12-15"	12/14/01	3150		100	408		13	144		13	350000		6250
CSB-35A-D	295481	24-27"	12/14/01	4.9		1	6		1	0.62		0.5	285		6.3
CSB-35A-E	295482	36-39"	12/14/01	3.9		1	6.3		1	0.99		0.5	499		13
CSB-35A-F	295483	48-51"	12/14/01	1.7		1	6.3		1		U	0.5	69		1.3
CSB-35A-G	295484	60-63"	12/14/01	6.3		1	6.6		1	0.89		0.5	156		3.2
CSB-35A-H	295485	72-75"	12/14/01	27	J	1	8.1		1	1.5	J	0.5	1520	J	32
CSB-35A-I	295486	84-87"	12/14/01		U	1	5.9		1		U	0.5	11		0.6
CSB-35A-J	295487	96-99"	12/14/01		U	1	4.1		1		U	0.5	11		0.6
CSB-38A-A	295503	0-3"	12/14/01	156	J	2.5	67		6.3	110		6.3	6200		125
CSB-38A-B	295504	6-9"	12/14/01		U	1	7.9		1		U	0.5	14		0.6
CSB-38A-C	295505	12-15"	12/14/01		U	1	9.3		1		U	0.5	22		0.6
CSB-38A-D	295506	24-27"	12/14/01		U	1	2.5		1		U	0.5	12		0.6
CSB-38A-E	295507	36-39"	12/14/01	6.2		1	8.6		1	6.8		0.5	319		6.3

Notes:

Q - Qualifier

RL - Reporting Limit

J - Estimated

FD - Field Duplicate

Results reported in mg/kg

TABLE 5-2
RMC - BEECHGROVE PHASE II RFI
Soil Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Arsenic			Lead		
				Result	Q	RL	Result	Q	RL
R2BG-1A	286626	0-3"	8/24/01	9.8		1		NA	
R2BG-1B	286627	3-10"	8/24/01	8		1		NA	
R2BG-2A	286628	0-3"	8/24/01	10		1		NA	
R2BG-2B	286629	3-10"	8/24/01	7.2		1		NA	
R2BG-3A	286630	0-3"	8/24/01	6		1		NA	
R2BG-3B	286631	3-10"	8/24/01	7.5		1		NA	
R2BG-4A	286632	0-3"	8/24/01	3.1		1		NA	
R2BG-4B	286633	3-10"	8/24/01	6.6		1		NA	
R2SB-1A	286575	0-3"	8/23/01	141		3.2	1750		25
R2SB-1A-A	295461	0-3"	12/13/01	58	J	1	2250		32
R2SB-1A-B	295462	6-9"	12/13/01	7.6	J	1	609		6.3
R2SB-1A-C	295463	12-15"	12/13/01	7.8	J	1	4230		32
R2SB-1B	286576	3-10"	8/23/01	50		1	1080		25
R2SB-2A	286624	0-3"	8/23/01	19	J	1	1290	J	25
R2SB-2A-A	295456	0-3"	12/13/01	16	J	1	918		13
R2SB-2A-B	295457	6-9"	12/13/01	15	J	1	4120		63
R2SB-2A-C	295458	12-15"	12/13/01	4.6	J	1	816		6.3
R2SB-2B	286625	3-10"	8/23/01	10		1	2760	J	63
R2SB-3A	286620	0-3"	8/23/01	38	J	1	991	J	13
R2SB-3A-A	295452	0-3"	12/13/01	36		1	1620		32
R2SB-3A-B	295453	6-9"	12/13/01	19		3.1	1410		32
R2SB-3A-C	295454	12-15"	12/13/01	6.3	J	1	1330		32
R2SB-3B	286621	3-10"	8/23/01	10		1	1760	J	25
R2SB-4A	286622	0-3"	8/23/01	26	J	1	1980	J	25
R2SB-4A-A	295447	0-3"	12/13/01	28	J	1	2490		63
R2SB-4A-B	295449	6-9"	12/13/01	13		1	874		13
R2SB-4A-C	295451	12-15"	12/13/01	18	J	1	1420		32
R2SB-4B	286623	3-10"	8/23/01	12	J	1	1380	J	25
R2SB-53-A	295472	0-3"	12/13/01	8.4		1	499		6.3
R2SB-53-B	295473	6-9"	12/13/01	3.3	J	1	58		0.6
R2SB-5A	286609	0-3"	8/23/01	10		1	121		3.2
R2SB-5B	286610	3-10"	8/23/01	5.5		1	68		1.3
R2SB-6A	286618	0-3"	8/23/01	12	J	1	587	J	6.3
R2SB-6B	286619	3-10"	8/23/01	11	J	1	286	J	3.2
R2SB-7A	286615	0-3"	8/23/01	9.6	J	1	78	J	1.3
R2SB-7B	286616	3-10"	8/23/01	13	J	1	35	J	0.6
R2SB-8A	286577	0-3"	8/23/01	13		1	197		3.2
R2SB-8B	286578	3-10"	8/23/01	8.4		1	51		0.6
R2SB-9A	286579	0-3"	8/23/01	47		1	3330		63
R2SB-9B	286580	3-10"	8/23/01	12		1	287		6.3
R2SB-10A	286613	0-3"	8/23/01	8.9		1	25	J	0.6
R2SB-10B	286614	3-10"	8/23/01	12	J	1	10	J	0.6
R2SB-11A	286604	0-3"	8/23/01	14		1	360		6.3
R2SB-11B	286605	3-10"	8/23/01	6.2		1	83		1.3
R2SB-12A	286607	0-3"	8/23/01	11		1	222		3.2
R2SB-12B	286608	3-10"	8/23/01	8.6		1	71		1.3

Notes:

Q - Qualifier

RL - Reporting Limit

J - Estimated, NA - Not Analyzed

FD - Field Duplicate

Results reported in mg/kg

TABLE 5-2
RMC - BEECHGROVE PHASE II RFI
Soil Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Arsenic			Lead		
				Result	Q	RL	Result	Q	RL
R2SB-13A	286581	0-3"	8/23/01	53		1	7390		125
R2SB-13A-A	295465	0-3"	12/13/01	14	J	1	2910		32
R2SB-13A-B	295466	6-9"	12/13/01	2.1	J	1	24		0.6
R2SB-13A-C	295467	12-15"	12/13/01	4.5	J	1	11		0.6
R2SB-13B	286582	3-10"	8/23/01	27		1	875		13
R2SB-14A	286611	0-3"	8/23/01	8.6		1	89		1.3
R2SB-14B	286612	3-10"	8/23/01	3.6		1	7.3		0.6
R2SB-15A	286602	0-3"	8/23/01	4.8		1	265		3.2
R2SB-15B	286603	3-10"	8/23/01	14		1	184		3.2
R2SB-16A	286600	0-3"	8/23/01	7.7		1	179		3.2
R2SB-16B	286601	3-10"	8/23/01	9		1	125		3.2
R2SB-17A	286583	0-3"	8/23/01	25		1	4160		63
R2SB-17B	286584	3-10"	8/23/01	11		1	267		3.2
R2SB-18A	286598	0-3"	8/23/01	10		1	669		13
R2SB-18B	286599	3-10"	8/23/01	6.3		1	122		3.2
R2SB-19A	286596	0-3"	8/23/01	16		1	796		13
R2SB-19B	286597	3-10"	8/23/01	14		1	250		3.2
R2SB-20A	286593	0-3"	8/23/01	9.6		1	486		6.3
R2SB-20B	286594	3-10"	8/23/01	4.4		1	129		3.2
R2SB-52-A	295468	0-3"	12/13/01	4.6	J	1	300		3.2
R2SB-52-B	295469	6-9"	12/13/01	3.3	J	1	5.7		0.6
R2SB-21A	286591	0-3"	8/23/01	10		1	296		3.2
R2SB-21B	286592	3-10"	8/23/01	7		1	84		1.3
R2SB-22A	286589	0-3"	8/23/01	13		1	734		13
R2SB-22B	286590	3-10"	8/23/01	12		1	188		3.2
R2SB-23A	286588	0-3"	8/23/01	10		1	463		6.3
R2SB-23B	286688	3-10"	8/23/01	13		1	105		1.3
R2SB-24A	286586	0-3"	8/23/01	13		1	779		13
R2SB-24B	286587	3-10"	8/23/01	9.1		1	117		3.2
R2SB-32A	286659	0-3"	8/27/01	4.9		1	286	J	6.3
R2SB-32B	286660	3-10"	8/27/01	4.2		1	91	J	1.3
R2SB-33A	286661	0-3"	8/27/01	6.3		1	202		3.2
R2SB-33B	286662	3-10"	8/27/01	5.7		1	67		1.3
R2SB-34A	286664	0-3"	8/27/01	7.1		1	170	J	3.2
R2SB-34B	286665	3-10"	8/27/01	4.1		1	28	J	0.6
R2SB-35A	286655	0-3"	8/27/01	3.7		1	191	J	3.2
R2SB-35B	286656	3-10"	8/27/01	4.7		1	79		1.3
R2SB-36A	286650	0-3"	8/27/01	7.8		1	310	J	6.3
R2SB-36B	286651	3-10"	8/27/01	6.1		1	109	J	3.2
R2SB-37A	286638	0-3"	8/27/01	9.2		1	366		6.3
R2SB-37B	286639	3-10"	8/27/01	8		1	509		6.3
R2SB-38A	286635	0-3"	8/27/01	6.5		1	282		6.3
R2SB-38B	286636	3-10"	8/27/01	5.2		1	175		3.2
R2SB-39A	286640	0-3"	8/27/01	8.7		1	383		6.3
R2SB-39B	286641	3-10"	8/27/01	7.9		1	144		3.2
R2SB-40A	286657	0-3"	8/27/01	6.9		1	422	J	6.3
R2SB-40B	286658	3-10"	8/27/01	4		1	50	J	0.6

Notes:

Q - Qualifier

RL - Reporting Limit

J - Estimated, NA - Not Analyzed

FD - Field Duplicate

Results reported in mg/kg

TABLE 5-2
RMC - BEECHGROVE PHASE II RFI
Soil Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Arsenic			Lead		
				Result	Q	RL	Result	Q	RL
R2SB-41A	286648	0-3"	8/27/01	5.9		1	172	J	3.2
R2SB-41B	286649	3-10"	8/27/01	5.9		1	128	J	3.2
R2SB-42A	286653	0-3"	8/27/01	4.2		1	165	J	3.2
R2SB-42B	286654	3-10"	8/27/01	3.9		1	77	J	1.3
R2SB-43A	286644	0-3"	8/27/01	7.4		1	250	J	3.2
R2SB-43B	286645	3-10"	8/27/01	7.4		1	201	J	3.2
R2SB-44A	286642	0-3"	8/27/01	7.8		1	252		3.2
R2SB-44B	286643	3-10"	8/27/01	8.5		1	108		3.2
R2SB-45A	286646	0-3"	8/27/01	7.3		1	140	J	3.2
R2SB-45B	286647	3-10"	8/27/01	6.2		1	85	J	1.3
R2SB-46-A	288689	0-3"	9/24/01	6.9	J	1	34		0.6
R2SB-46-B	288690	3-10"	9/24/01	6.5	J	1	41		0.6
R2SB-47-A	288692	0-3"	9/24/01	6.7	J	1	45		0.6
R2SB-47-B	288693	3-10"	9/24/01	9	J	1	24		0.6
R2SB-48-A	288694	0-3"	9/24/01	6.5	J	1	41		0.6
R2SB-48-B	288695	3-10"	9/24/01	6.7	J	1	45		0.6
R2SB-49-A	288696	0-3"	9/24/01	8	J	1	47		0.6
R2SB-49-B	288697	3-10"	9/24/01	9.7	J	1	117		3.2
R2SB-50-A	288698	0-3"	9/24/01	6.9	J	1	34		0.6
R2SB-50-B	288699	3-10"	9/24/01	7	J	1	36		0.6
R2SB-51-A	295111	0-3"	12/12/01	6.6		1	285	J	6.3
R2SB-51-B	295112	6-9"	12/12/01	7		1	199	J	6.3

Notes:

Q - Qualifier

FD - Field Duplicate

RL - Reporting Limit

Results reported in mg/kg

J - Estimated, NA - Not Analyzed

TABLE 5-3
RMC - BEECH GROVE PHASE II RFI
Sediment Analytical Results



Sample Location	Lab ID	Depth	Sample Date	Lead			Arsenic		
				Results	Q	RL	Results	Q	RL
R2SED-1A	286553	0-6"	8/21/01	1210		25	10		1
R2SED-1B	286554	6-12"	8/21/01	1550		25	14		1
R2SED-1C	295099	12-18"	12/12/01	19	J	0.6	10		1
R2SED-1D	295100	18-24"	12/12/01	62	J	0.6	5.5		1
R2SED-2A	286555	0-6"	8/21/01	1230		25	10		1
R2SED-2B	286556	6-12"	8/21/01	955		25	11		1
R2SED-3A	286557	0-6"	8/21/01	1570		25	12		1
R2SED-3B	286558	6-12"	8/21/01	6020		125	9.3		1
R2SED-3C	295101	12-18"	12/12/01	622	J	13	13		1
R2SED-3D	295102	18-24"	12/12/01	691	J	13	12		1
R2SED-4A	286559	0-6"	8/21/01	2480		63	20		1
R2SED-4B	286560	6-12"	8/21/01	1570		25	17		1
R2SED-5A	286561	0-6"	8/21/01	5410		125	46		1
R2SED-5B	286562	6-12"	8/21/01	1240		25	20		1
R2SED-5C	295103	12-18"	12/12/01	73	J	1.3	5.7		1
R2SED-5D	295104	18-24"	12/12/01	20	J	0.6	7.3		1
R2SED-6A	286564	0-6"	8/21/01	8430		125	44		1
R2SED-6B	286565	6-12"	8/21/01	3840		63	35		1
R2SED-7A	286566	0-6"	8/21/01	5480		125	39		1
R2SED-7B	286567	6-12"	8/21/01	2340		63	26		1
R2SED-7C	295106	12-18"	12/12/01	61	J	0.6	13		1
R2SED-7D	295107	18-24"	12/12/01	27	J	0.6	9.2		1
R2SED-8A	286568	0-6"	8/21/01	8190		125	36		1
R2SED-8B	286569	6-12"	8/21/01	2610		63	23		1
R2SED-9A	286570	0-6"	8/21/01	3630		63	29		1
R2SED-9B	286571	6-12"	8/21/01	471		6.3	11		1
R2SED-9C	295109	12-18"	12/12/01	25	J	0.6	8.9		1
R2SED-9D	295110	18-24"	12/12/01	39	J	0.6	8.2		1
R2SED-10A	286572	0-6"	8/21/01	84		1.3	9.4		1
R2SED-10B	286573	6-12"	8/21/01	25		0.6	7.2		1

Notes:

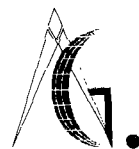
Q - Qualifier

RL - Reporting Limit

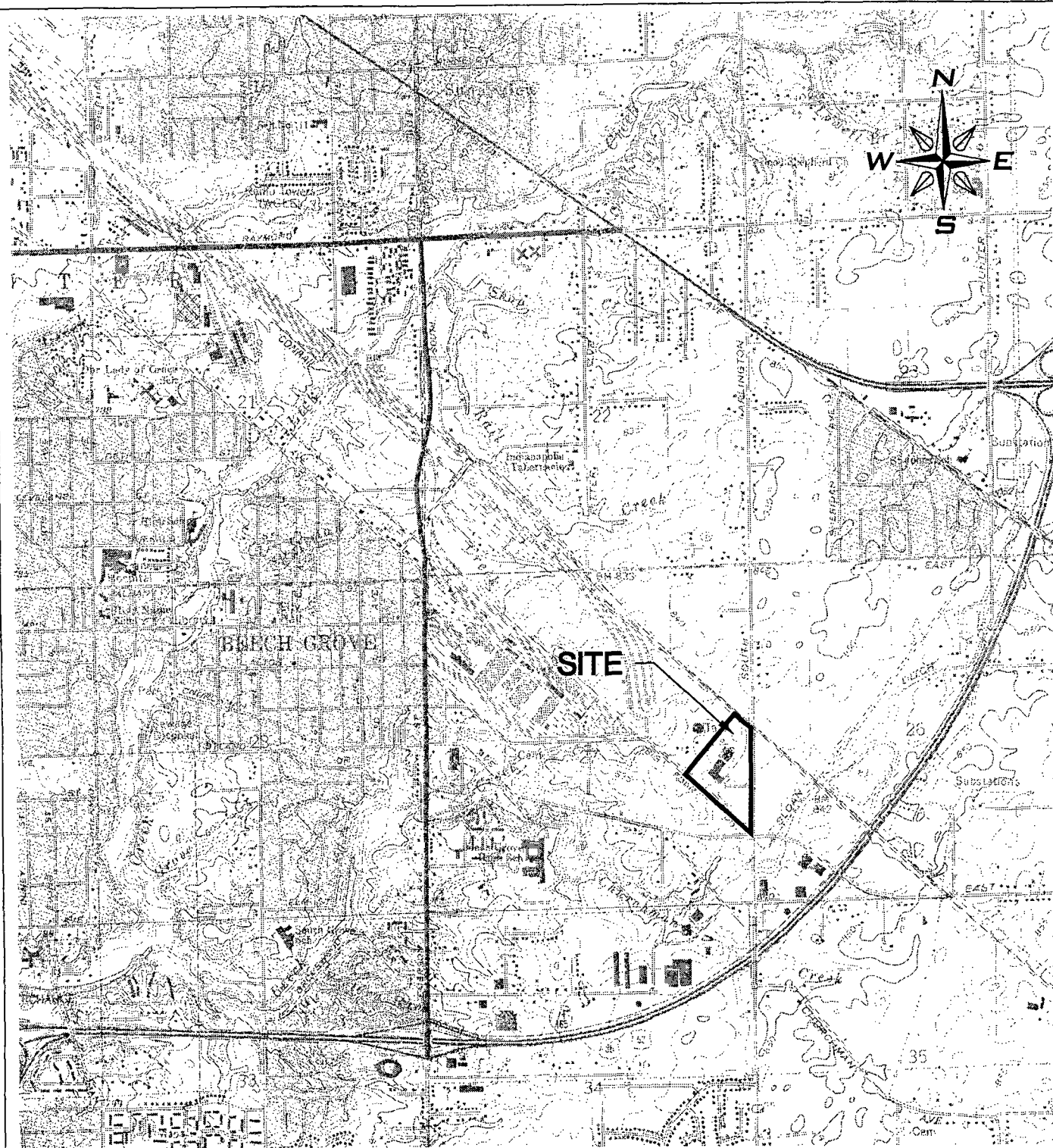
J - Estimated

FD - Field Duplicate

Results reported in mg/kg



FIGURES



REF. U.S.G.S. 7 1/2 MINUTE
BEECH GROVE, IND
QUADRANGLE MAP

**REFINED METALS CORPORATION
PHASE II RCRA FACILITY INVESTIGATION**
BEECH GROVE, INDIANA

Date:
10/12/98
Scale:
N.T.S.
Drawn By:
P.S.G.
Checked By:
J.S.W.
Project Mgr:
P.G.S.
Dwg No.
98478-01
Issued:
MAY 03 2002

SITE LOCATION MAP

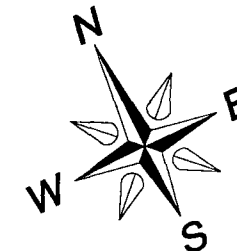
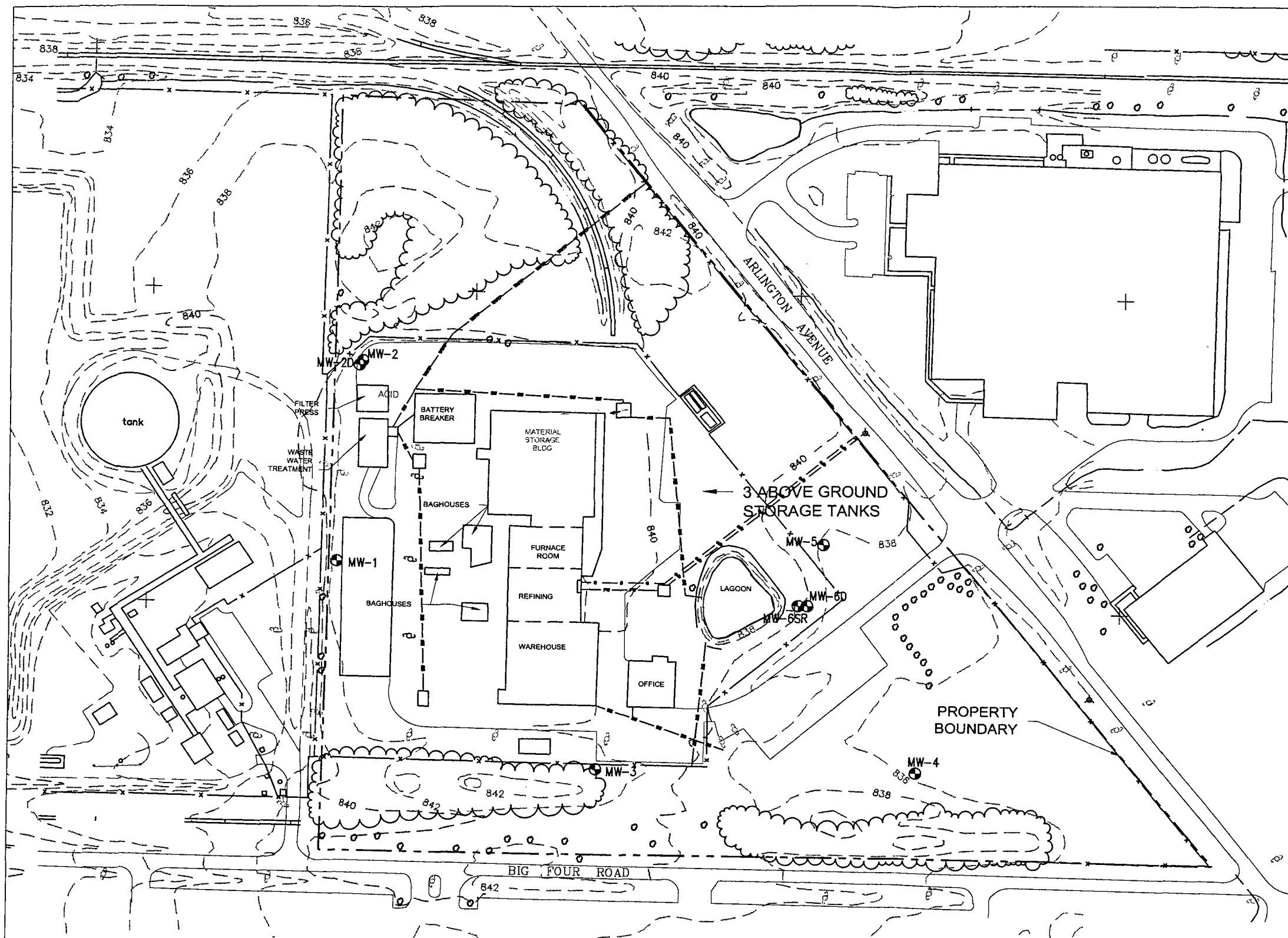


Advanced GeoServices Corp.

Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Project No.
98-478-05

FIGURE: 2-1



LEGEND

● MONITORING WELL LOCATION

REFINED METALS CORPORATION PHASE II INVESTIGATION REPORT BEECH GROVE, IN

Scale:
1"=180'
Originated By:
B.L.
Drawn By:
V.E.N.
Checked By:
Project Mgr:
P.G.S.
Dwg No.
98478-02
Issued:
MAY 03 2002

SITE PLAN

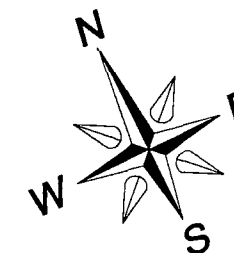
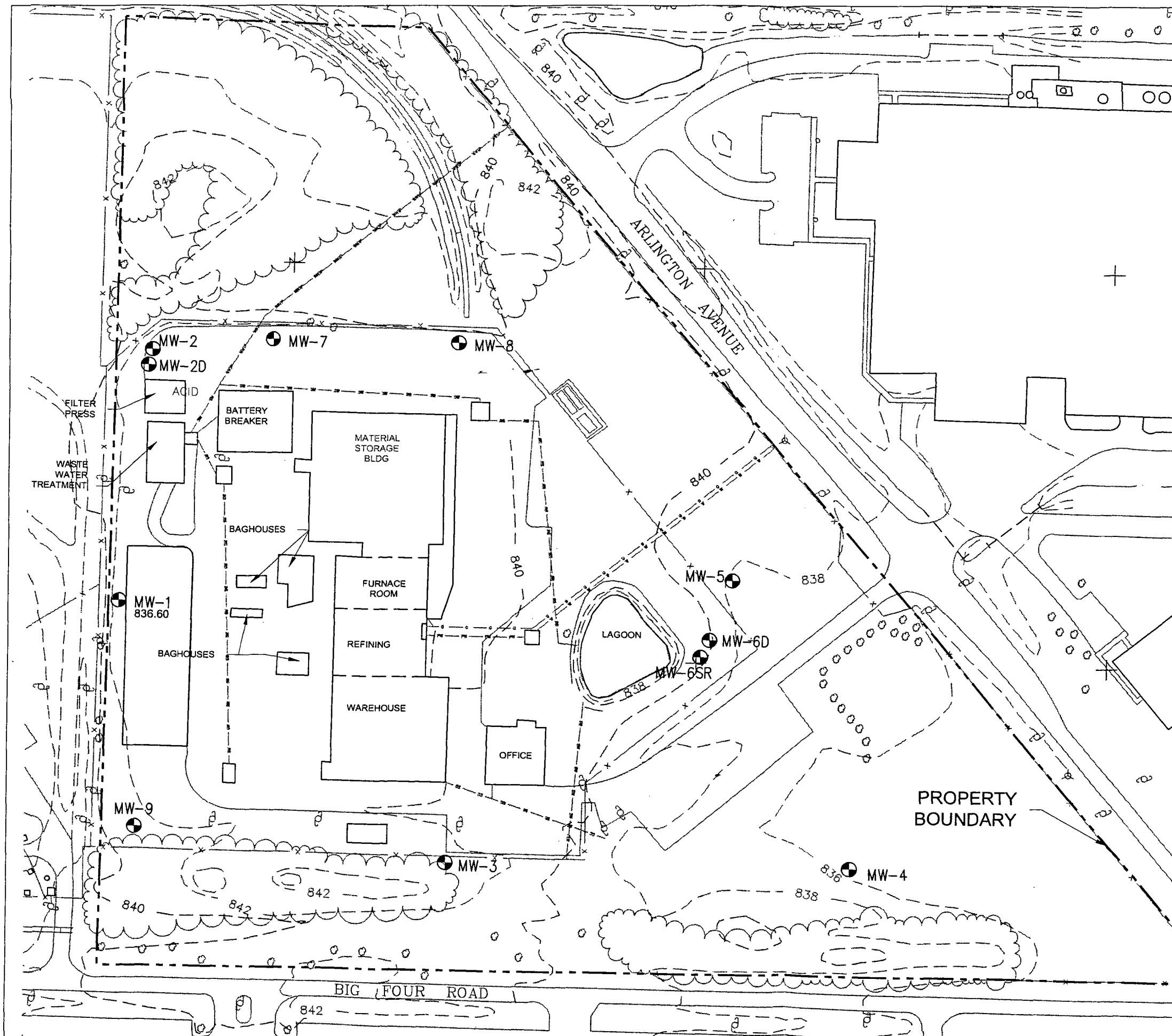


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Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Project No.
98-478-05

FIGURE: 2-2

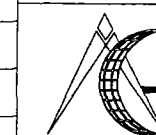


LEGEND

● MONITORING WELL LOCATION

**REFINED METALS CORPORATION
PHASE II RCRA FACILITY INVESTIGATION**
BEECH GROVE, INDIANA

SITE MONITORING WELL LOCATIONS



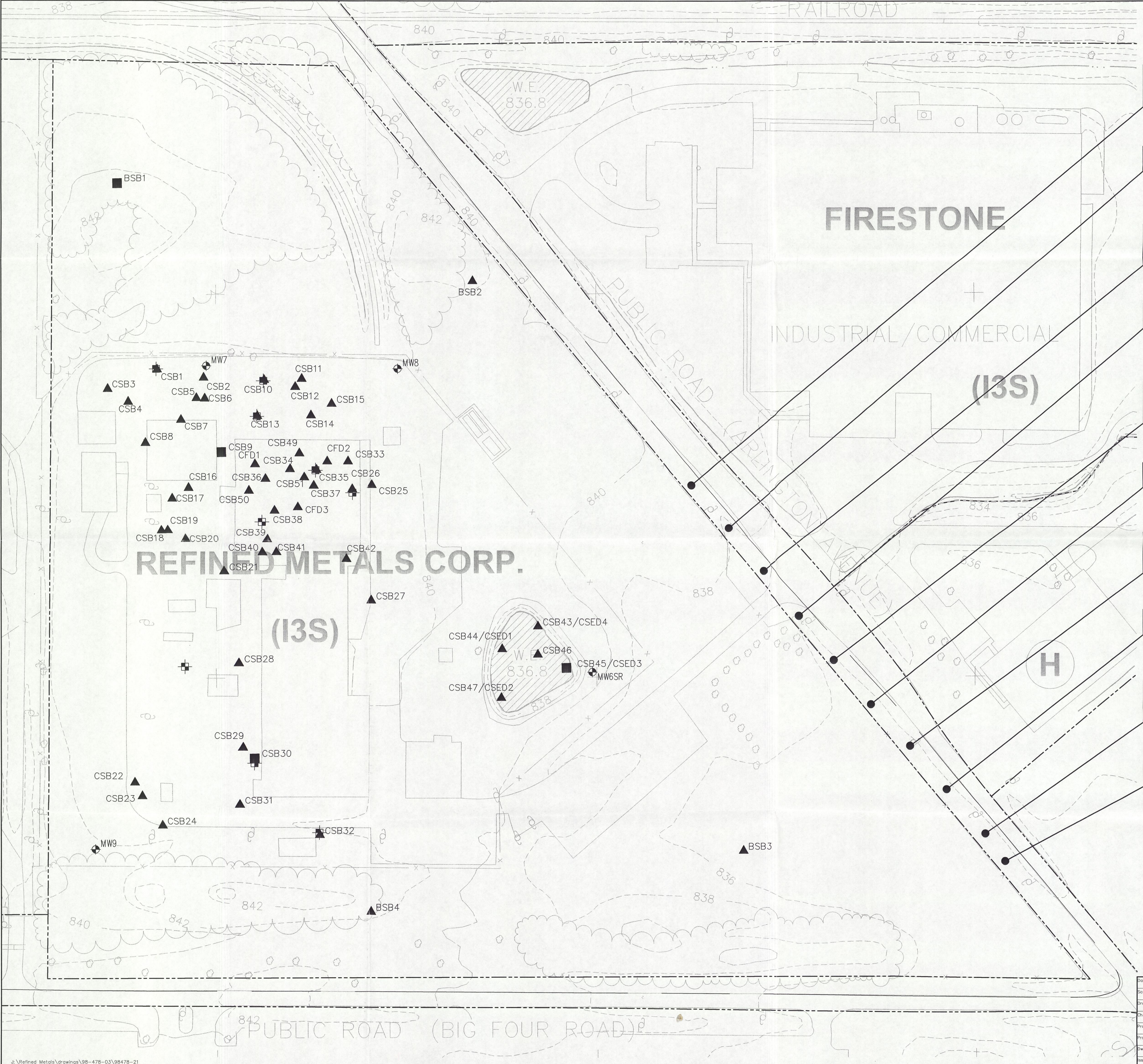
Advanced GeoServices Corp.

Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Scale:
1"=130'
Originated By:
P.G.S.
Drawn By:
P.S.G.
Checked By:
J.S.W.
Project Mgr:
P.G.S.
Dwg No.
98478-22
Issued:
MAY 03 2002

Project No.
98-478-05

FIGURE: 4-1



SAMPLE ID	Lead	Arsenic
R2SED-1A	1210	10
R2SED-1B	1550	14
R2SED-1C	19 J	10
R2SED-1D	62 J	5.5

SAMPLE ID	Lead	Arsenic
R2SED-2A	1230	10
R2SED-2B	955	11

SAMPLE ID	Lead	Arsenic
R2SED-3A	1570	12
R2SED-3B	6020	9.3
R2SED-3C	622 J	13
R2SED-3D	691 J	12

SAMPLE ID	Lead	Arsenic
R2SED-4A	2480	20
R2SED-4B	1570	17

SAMPLE ID	Lead	Arsenic
R2SED-5A	5410	46
R2SED-5B	1240	20
R2SED-5C	73 J	5.7
R2SED-5D	20 J	7.3

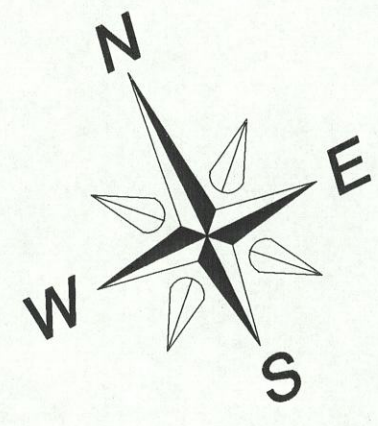
SAMPLE ID	Lead	Arsenic
R2SED-6A	8430	44
R2SED-6B	3840	35

SAMPLE ID	Lead	Arsenic
R2SED-7A	5480	39
R2SED-7B	2340	26
R2SED-7C	61 J	13
R2SED-7D	27 J	9.2

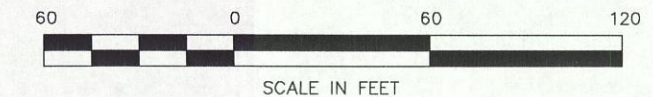
SAMPLE ID	Lead	Arsenic
R2SED-8A	8190	36
R2SED-8B	2610	23

SAMPLE ID	Lead	Arsenic
R2SED-9A	3630	29
R2SED-9B	471	11
R2SED-9C	25 J	8.9
R2SED-9D	39 J	8.2

SAMPLE ID	Lead	Arsenic
R2SED-10A	84	9.4
R2SED-10B	25	7.2




- LEGEND**
- ▲ SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
 - APPROXIMATE SAMPLE LOCATION—NOT SURVEYED
 - ⊕ MONITORING WELL LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
 - ⊕ SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
 - SED SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN



**REFINED METALS CORPORATION
PHASE II RCRA FACILITY INVESTIGATION**
BEECH GROVE, IN

Date:	4/23/02
Scale:	1"=60'
Drawn By:	P.S.G.
Checked By:	J.S.W.
Project Mgr.:	J.S.W.
Project No.:	98-478-05
Dwg No.:	98478-21
Issue:	MAY 5 2002

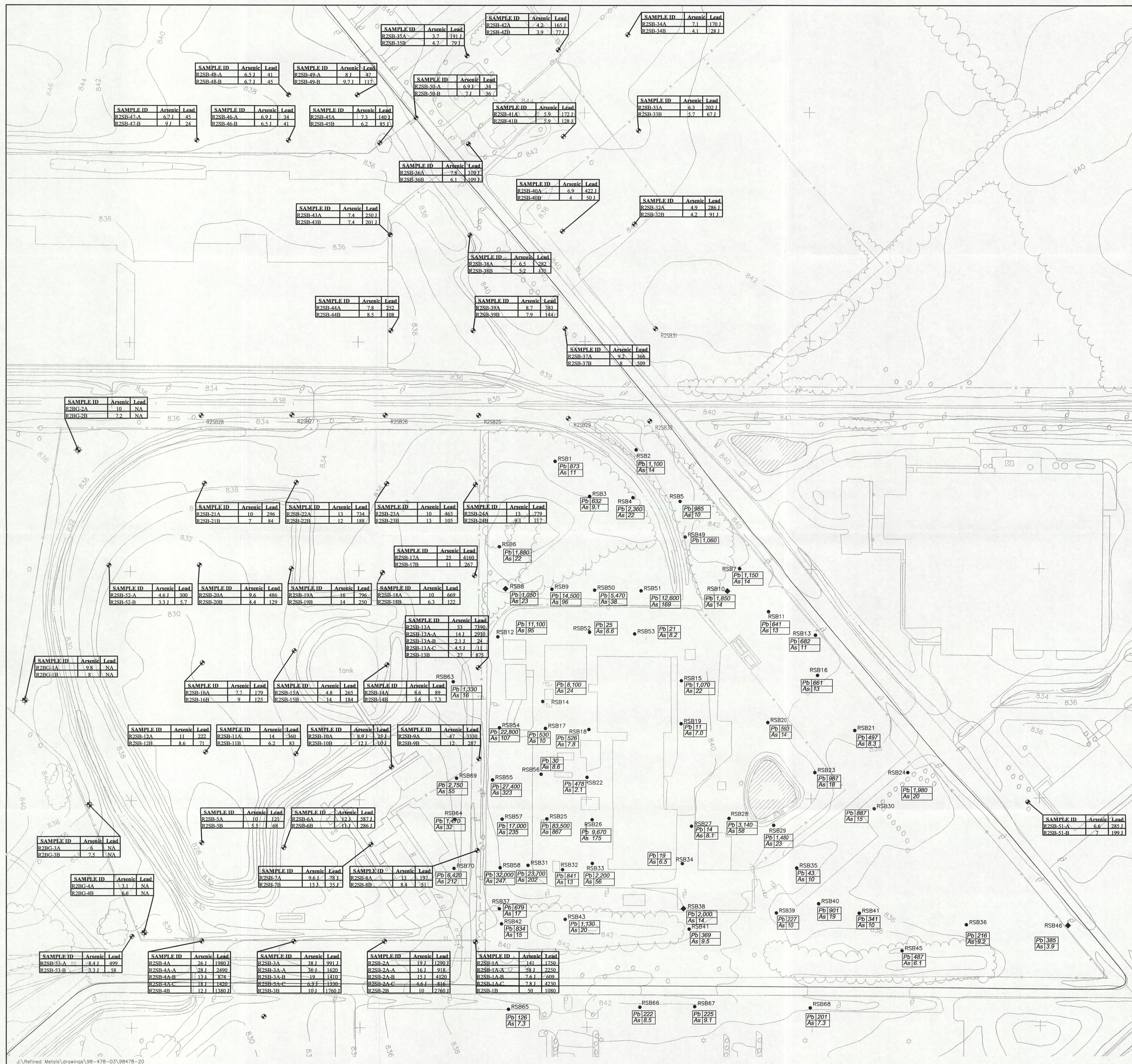


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Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

SEDIMENT SAMPLE LOCATIONS

DRAWING:

4-2



LEGEND

- RSB11 SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
- APPROXIMATE SAMPLE LOCATION—NOT SURVEYED
- Pb-887 ANALYTICAL RESULT—LEAD (MG/KG)
- As-23 ANALYTICAL RESULT—ARSENIC (MG/KG)

100 0 100 200
SCALE IN FEET

REFINED METALS CORPORATION PHASE II RCRA FACILITY INVESTIGATION BEECH GROVE, IN

SOIL SAMPLE LOCATIONS

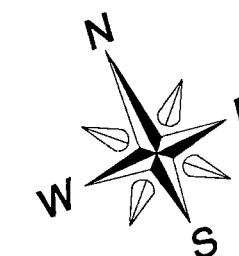


Advanced GeoServices Corp.
Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Date: 4/23/02
Scale: 1"=100'
Drawn By: P.S.G.
Checked By: J.S.W.
Project Mgr: J.S.W.
Project No.: 98-478-05
Dwg No.: 98478-20
Issued: MAY 3 2002

DRAWING:

4-3



LEGEND

● SHALLOW MONITORING WELL

--833-- POTENTIOMETRIC SURFACE

NOTE: THE WATER TABLE ELEVATION MEASUREMENT FOR MW-6SR WAS CONSIDERED ANOMALOUS AND WAS EXCLUDED.

**REFINED METALS CORPORATION
CLOSURE INVESTIGATION REPORT**
BEECH GROVE, INDIANA

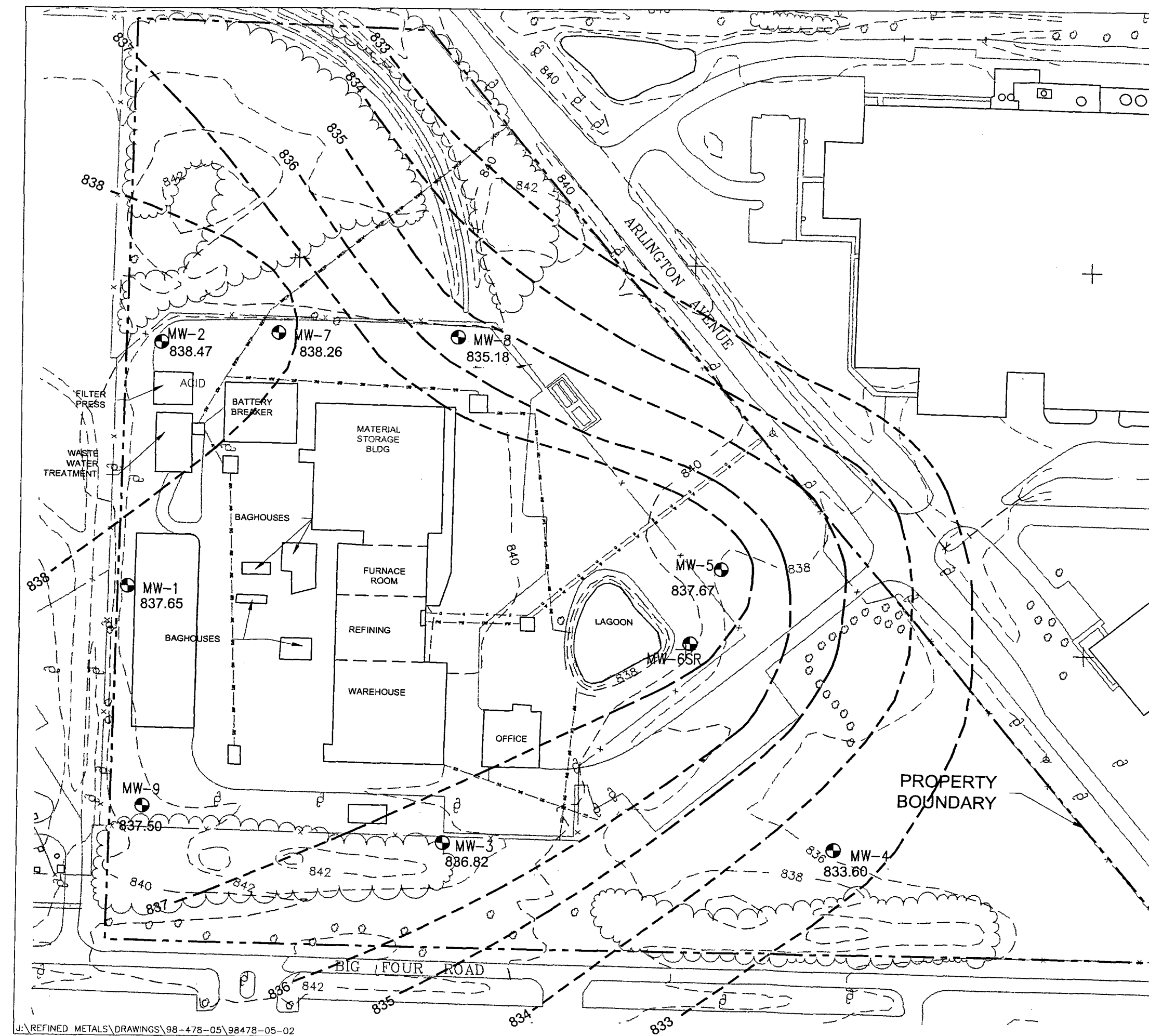
Scale:
1"=130'
Originated By:
J.S.W.
Drawn By:
S.M.F.
Checked By:
J.S.W.
Project Mgr:
P.G.S.
Dwg No.
98478-05-02
Issued:
MAY 03 2002

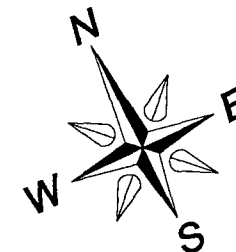
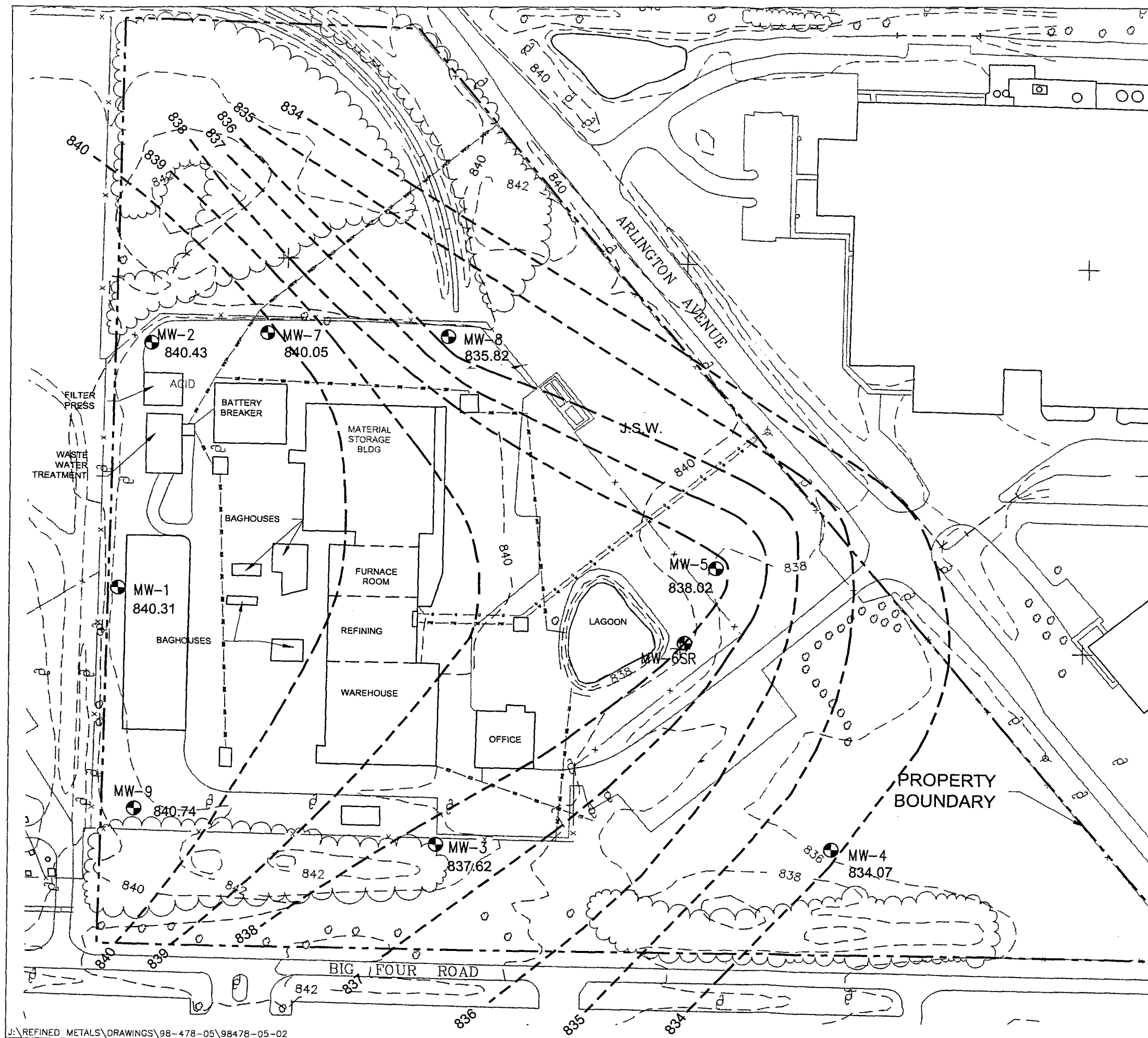


Advanced GeoServices Corp.
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Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Project No.
98-478-05

FIGURE: 5-1





LEGEND

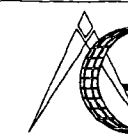
- SHALLOW MONITORING WELL
- 833--- POTENTIOMETRIC SURFACE

NOTE: THE WATER TABLE ELEVATION MEASUREMENT FOR MW-6SR WAS CONSIDERED ANOMALOUS AND WAS EXCLUDED.

REFINED METALS CORPORATION CLOSURE INVESTIGATION REPORT BEECH GROVE, INDIANA

Scale:
1"=130'
Originated By:
J.S.W.
Drawn By:
S.M.F.
Checked By:
J.S.W.
Project Mgr:
P.G.S.
Dwg No.
98478-05-02
Issued:
MAY 03 2002

POTENTIOMETRIC MAP
DECEMBER 2001 DATA



Advanced GeoServices Corp.
Chadds Ford Business Campus, Rts. 202 & 1
Brandywine One, Suite 202
Chadds Ford, Pennsylvania 19317

Project No.
98-478-05

FIGURE: 5-2



APPENDIX A

Boring Logs

BORING LOG

PAGE 1 OF/

PROJECT NUMBER: 98-478-0		PROJECT NAME: RMC - Beech Grove					
BORING / WELL NUMBER: MW-7		LOCATION: Beech Grove, Indiana					
DIAMETER: 4"		WATER DEPTH: 12.5'		DATE/TIME: 8/22/01			
GEOLOGIST: Brendan O'Donnell		COMPLETION DEPTH: 25'		DATE STARTED: 8/24/01			
DRILLING METHOD: HSA		SAMPLING METHOD: HSA/SS		DATE COMPLETED: 8/23/01			
DRILLING SUBCONTRACTOR: Boart Longyear		DEVELOPMENT METHOD: Surged Block		YIELD: —			
DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0' - 5.0' Clay, gray to greenish gray moist to dry			—	data not collected	NA.		Well Construction
5.0' - 10.0' Clay, brown, dry to moist		5	9.9 10.12 11.10 10.11 7.11 12.13 8.11 12.11				Riser: Sch. 40 PVC 0' - 15'
10.0' - 15.0' sandy silt, trace gravel brown to dark brown, stiff moist to saturated, ML		10	5.6 6.12 7.14 22.44				screen: 0.00 slot Sch. 40 PVC
15.0' - 20.0' sandy silt, light brown and gray, saturated, very stiff, ML		15	14.14 28.34 15.13 23.37 14.15				sandpack: #1 Sand 15' - 25'
20.0' - 25.0' sandy silt, light gray saturated, very stiff ML		20	18.32 15.10 14.28 18.21 21.24				Bent pipe: 15' - 15' seal
25.0' - 28.0' sandy silt, light gray saturated, very stiff - Hard (ML)		25	15.16 19.25 4.14 38.68				grout: 0' - 11'
		30					shelly tube collected at 26' - 28' for sieve & hydro testing
Boring terminated at 28'							

BORING LOG

PAGE 1 OF 1

PROJECT NUMBER: 98-478-05		PROJECT NAME: RMC - Beech Grove	
BORING / WELL NUMBER: MW-8		LOCATION: Beech Grove, Indiana	
DIAMETER: 4"	WATER DEPTH: 10.5'	DATE/TIME: 8/23/01	
GEOLOGIST: Brendan O'Donnell	COMPLETION DEPTH: 30.0'	DATE STARTED: 8/21/01	
DRILLING METHOD: HSA	SAMPLING METHOD: HSA/SS	DATE COMPLETED: 8/23/01	
DRILLING SUBCONTRACTOR: Boart Longyear	DEVELOPMENT METHOD: Surged Block	YIELD: —	

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0' - 5.0' Clay with construction debris (Fill) brown to dark brown, moist, FL			1 1 14, 6 11, 11		NA		Well construction Riser: Sch. 40 PVC 0'-20'
5.0' - 10.0' same as above, FL		5	5.6 12.6 3.3 3.4				Screen: 0.0105/ot Sch 40 PVC 20'-30'
10.0' - 15.0' sandy Silt, gray, medium stiff, moist, ML		10	3.4 5.4 5.7 7.11 12.13				Sand: #1 Sand 0'-18'
15.0' - 20.0' sandy Silt, gray, M. stiff saturated, ML		15	5.6 8.9 6.8 9.18 6.7				Bentonite : 16'-18' Seal
20.0' - 25.0' sandy Silt, gray, M. stiff saturated, ML		20	9.13 6.7 7.18 7.11 10.15				grout : 0'-16' 4590/590 Type II Portland Cement/Bentonite
25.0' - 30.0' sandy Silt, gray, stiff saturated, ML		25	13.13 16.14 6.7 13.23 9.24				
Boring terminated at 30'		30	33.18				

BORING LOG

PAGE 1 OF 1

PROJECT NUMBER: 98-478-05		PROJECT NAME: RMC Beech Grove				
BORING / WELL NUMBER: MW-9		LOCATION: Beech Grove, Indiana				
DIAMETER: 4"		WATER DEPTH: 15.3'			DATE/TIME: 8/23/01	
GEOLOGIST: Brendan O'Donnell		COMPLETION DEPTH: 25'			DATE STARTED: 8/22/01	
DRILLING METHOD: HSA		SAMPLING METHOD: HSA/SS			DATE COMPLETED: 8/23/01	
DRILLING SUBCONTRACTOR: Bant Longyear		DEVELOPMENT METHOD: Surge & Back			YIELD: —	
DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER
0.0' - 5.0' Sand with construction debris, dry, FL			15, 12	data not recorded	NA	
			10, 10			
			7, 7			
			7, 7			
		5	8, 8			
5.0' - 10.0' same as above, FL			10, 10			
			4, 5			
			5, 11			
		10	5, 7			
			6, 8			
10.0' - 15.0' sandy silt, light gray, medium stiff, ML			5, 5			
			5, 8			
			7, 8			
		15	9, 11			
			6, 6			
15.0' - 20.0' sand silt, light gray, stiff, ML			7, 7			
			3, 4			
			9, 11			
			11, 13			
		20	13, 27			
20.0' - 26.0' sandy silt, light gray, hard, saturated (ML)			41, 47			
			54, 63			
			22, 29			
		25	33, 41			
			12, 12			
Boring terminated at 26'						

Well Construction
 Riser: sch. 40 PVC
 0'-15'
 screen: 0.0105/ot
 sch. 40 PVC
 15'-25'
 sand: #1 sand
 pack 13'-15'
 Bentonite:
 Seal 11'-13'
 grout: 0'-11'

Steel by tube
 collected at
 22'-24" and
 24'-26" for
 sieve and
 hydro testing



APPENDIX B
Data Validation Report of Soil Samples Collected on August 21-27,
2001

DATA VALIDATION REPORT
OF
SOIL SAMPLES
COLLECTED AUGUST 21-27, 2001
FOR
INORGANIC ANALYSES

Sample Delivery Group No. 35132-30

PREPARED FOR:

Refined Metals Corporation
Beech Grove, Indiana

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

November 7, 2001
Project Number 2001-824-00

DATA VALIDATION REPORT INORGANICS

INTRODUCTION

This data validation report addresses the inorganic results from the soil samples collected on August 21 through 27, 2001, as part of the RMC Beech Grove, Indiana, Pre-Remedial Design (RD) sampling event. Soil samples were analyzed by Trimatrix in Grand Rapids, Michigan for lead and arsenic by USEPA SW-846 method 6010. The data were reported by Trimatrix under sample delivery group (SDG) 35132-30.

This review has been performed with guidance from the Indiana Department of Environmental Management's *Guidance to the Performance and Presentation of Analytical Chemistry Data* (July 1998) and the U.S. EPA's *National Functional Guideline for Inorganic Data Review* (Feb. 1994). The findings presented in this report are based upon a review of all data supplied by the laboratory.

1. Timeliness

All samples were prepared and analyzed within holding time limits of 6 months.

2. Sample Preparation

All sample preparation procedures were in accordance with the method protocols.

3. Calibration

Soil samples were analyzed for arsenic and lead by ICP-MS. The instruments were standardized according to the analytical method using one blank and a single calibration standard for each element. All calibrations (ICVs) were performed as required and met the criteria for acceptance.

4. Reference Control Samples/Calibration Verification

Reference control samples (CCVs) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. Control limits for the ICP-MS reference sample are 90-110 percent of the certified value. All recoveries met the acceptance criteria for control samples.

5. Blanks

No target analytes were detected in laboratory or field blanks, with the exception of:

Blank ID	Parameter	Concentration (µg/L)	Associated Samples
EB-1-JLV	Lead	11	R2SED-1-A/B, R2SED-2-A/B, R2SED-3-A/B, R2SED-4-A/B
EB-2-JLV	Lead	5.8	R2SED-5-A/B/C, R2SED-6-A/B, R2SED-7-A/B, R2SED-8-A/B, R2SED-9-A/B, R2SED-10-A/B/C
EB-3-JLV	Lead	2.8	R2SB-1-A, R2SB-8-A/B, R2SB-9-A/B, R2SB-13-A/B, R2SB-17-A/B/C
EB-4-JLV	Lead	2.3	R2SB-24-A/B, R2SB-23-A/B, R2SB-22-A/B, R2SB-21-A/B, R2SB-20-A/B/C
EB-5-JLV	Lead	1.7	R2SB-19-A/B, R2SB-18-A/B, R2SB-16-A/B, R2SB-15-A/B, R2SB-11-A/B/C
EB-6-JLV	Lead	1.6	R2SB-12-A/B, R2SB-5-A/B, R2SB-14-A/B, R2SB-10-A/B, R2SB-7-A/B/C, R2SB-6-A/B, R2SB-3-A/B, R2SB-4-A/B, R2SB-2-A/B
EB-7-JLV	Lead	8.6	Samples associated were only analyzed for arsenic
EB-10-JLV	Lead	2.9	R2SB-42-A/B, R2SB-35-A/B, R2SB-40-A/B, R2SB-32-A/B, R2SB-33-A/B/C, R2SB-34-A/B

Samples were qualified as non-detected (U) due to blank contamination.

6. ICP Interference Check Sample

The interference check sample (LCS) is analyzed by ICP-MS to verify interelement and background correction factors. Analysis was performed as required at the beginning and end of each sample analysis run and recoveries were within the specified criteria of 80-120 percent.

7. Duplicate Analysis

The relative percent differences (RPDs) were within the control limit of 35 percent for solid samples.

8. Field Duplicates

Samples R2BG-4-B/C, R2SB-11-A/C, R2SB-17-A/C, R2SB-20-A/C, R2SB-33-A/C, R2SB-36-A/C, R2SB-38-A/C, and R2SB-7-A/C were field duplicates. Results exhibited reasonable agreement, with the exception of the following:

Parameter	Sample ID	Sample Conc	Field Duplicate ID	Field Duplicate Conc	Difference/RPD	Criteria
Arsenic	R2SB-11-A	14	R2SB-11-C	7.5	60.47%	40%
Lead	R2SB-7-A	78	R2SB-7-C	49	45.67%	40%

Sample and field duplicate results or reporting limits were qualified as estimated (J) for the parameter exceeding the criteria.

9. Matrix Spike Analysis

The matrix spike (MS) percent recoveries were within the QC limits of 75-125 percent (soil matrices).

10. Laboratory Control Sample (LCS)

The laboratory control sample (LCS) percent recoveries were within the QC limits of 80-120 percent.

11. ICP Serial Dilution

All concentrations were either less than 50 times the instrument detection limit (IDL) or greater than 50 times the IDL with the percent differences that were ± 10 percent of the serial dilution result, with the exception of the following:

Sample ID	Parameter	Original Conc	Diluted Conc	%D	IDL	IDL * 50
R2SB-34-A	Lead	196.07	170.04	13.27	0.029	1.45
R2SB-43-A	Lead	299.38	250.24	16.41	0.029	1.45
R2SB-2-B	Lead	2413.23	2821.16	16.90	0.029	1.45
R2SB-10-A	Arsenic	8.9	7.97	10.62	0.097	4.85
R2SB-10-A	Lead	25.49	22.84	10.41	0.029	1.45

Sample results or reporting limits were qualified as estimated (J/UJ).

DATA VALIDATION REPORT
VALIDATION SUMMARY

SUMMARY

All the data is useable as qualified.

DATA QUALIFIERS

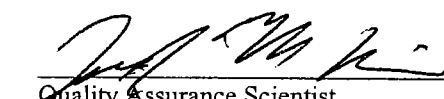
The following qualifiers were used to modify the data quality and usefulness of individual analytical results.

- U - The analyte was not detected at the given quantitation limit.
- J - The analyte was positively identified and detected; however, the concentration is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
- UJ - The analyte was not detected; the associated quantitation limit is an estimated value.
- D - The value was obtained from a reanalysis of a diluted sample.
- E - Concentration reported is estimated, the concentration exceeded the instrument's calibration range. The sample should be diluted.
- R - The value reported has been rejected.

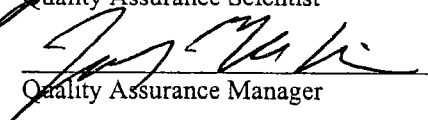
DATA ASSESSMENT

Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory and not directly involved in the project.

This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgement the data are acceptable for use except where qualified with qualifiers which modify the usefulness of those individual values.


Quality Assurance Scientist

11/16/2001
Date


Quality Assurance Manager

11/16/2001
Date

INORGANIC DATA VALIDATION SUMMARY

Site Name: RMC Beechgrove
 Project Number: _____
 Sampling Date(s): 8/21-27/2001

Laboratory: Trimatrix
 Case /Order No.: 35132-30

Compound List: ☐ TAL ☐ Priority Pollutant ☐ Appendix IX ☒ Other As, Pb
 Method: ☐ CLP SOW ILMO4. ☐ 40 CFR 136 ☒ SW-846 Method 6010 ☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			
Initial Calibrations	✓			
Continuing Calibrations	✓			
CRDL Standards	✓			
Blank Analysis Results			✓	
ICP Interference Check Sample Recoveries	✓			
Duplicate Results	✓			
Field Duplicate Results			✓	
Spike Analysis Recoveries	✓			
Serial Dilution Results	✓		✓	
Laboratory Control Sample Results	✓			
Furnace AA QC Analysts				NA
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments: _____

Accept - No qualification required.
 FYI - For your information only, no qualification necessary.
 Qualify - Qualify as rejected, estimated or biased
 NA - Not applicable.
 NR - Not reviewed.

QA Scientist _____ Date _____

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-1A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286553

7440-38-2 Arsenic, Total

10

| MS mg/kg dry

7439-92-1 Lead, Total

1210 U

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

14:00

Date Received:

08/29/01

Time Received:

08:20

000037



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-1B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286554
----------------	--------

7440-38-2	Arsenic, Total	14	MS	mg/kg dry
7439-92-1	Lead, Total	1550	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	14:05
Date Received:	08/29/01
Time Received:	08:20

000038

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-2A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286555

7440-38-2 Arsenic, Total

10

MS mg/kg dry

7439-92-1 Lead, Total

1230 U

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

14:20

Date Received:

08/29/01

Time Received:

08:20

000039

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-2B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286556

7440-38-2 Arsenic, Total

11

MS mg/kg dry

7439-92-1 Lead, Total

955 U

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

14:25

Date Received:

08/29/01

Time Received:

08:20

000040

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-3A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286557

7440-38-2	Arsenic, Total	12		MS	mg/kg dry
7439-92-1	Lead, Total	1570		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	14:35
Date Received:	08/29/01
Time Received:	08:20

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-3B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286558

7440-38-2 Arsenic, Total

9.3

MS mg/kg dry

7439-92-1 Lead, Total

6020 U

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

14:40

Date Received:

08/29/01

Time Received:

08:20

000042

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-4A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286559
----------------	--------

7440-38-2	Arsenic, Total	20		MS	mg/kg dry
7439-92-1	Lead, Total	2480 U		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	14:55
Date Received:	08/29/01
Time Received:	08:20

000043

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Subm: August 2001 Samples

Phone: (616) 975-4500

CAS No.

R2SED-4B

Data Qualifiers
C | Q | M

Units

Lab Sample No:

286560

7440-38-2 Arsenic, Total

17

MS mg/kg dry

7439-92-1 Lead, Total

1570

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

15:00

Date Received:

08/29/01

Time Received:

08:20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-5A	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	286561
----------------	--------

7440-38-2	Arsenic, Total	46		MS	mg/kg dry
7439-92-1	Lead, Total	5410		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	15:15
Date Received:	08/29/01
Time Received:	08:20

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-5B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286562

7440-38-2 Arsenic, Total

20

| MS mg/kg dry

7439-92-1 Lead, Total

1240

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

15:20

Date Received:

08/29/01

Time Received:

08:20

000046

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-5C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286563

7440-38-2 Arsenic, Total

39

MS mg/kg dry

7439-92-1 Lead, Total

5030

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

15:25

Date Received:

08/29/01

Time Received:

08:20

000047



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-6A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286564

7440-38-2 Arsenic, Total

44

MS mg/kg dry

7439-92-1 Lead, Total

8430

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

15:35

Date Received:

08/29/01

Time Received:

08:20

000048

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-6B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286565

7440-38-2	Arsenic, Total	35		MS	mg/kg dry
7439-92-1	Lead, Total	3840		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	15:40
Date Received:	08/29/01
Time Received:	08:20

000049



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-7A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286566
----------------	--------

7440-38-2	Arsenic, Total	39			MS	mg/kg dry
7439-92-1	Lead, Total	5480			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	15:55
Date Received:	08/29/01
Time Received:	08:20

000050



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-7B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286567

7440-38-2 Arsenic, Total

26

MS mg/kg dry

7439-92-1 Lead, Total

2340

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

16:00

Date Received:

08/29/01

Time Received:

08:20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SED-8A MS/MSD	Data Qualifiers C Q M	Units
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Lab Sample No: 286568

7440-38-2	Arsenic, Total	36	MS mg/kg dry
7439-92-1	Lead, Total	* 8190	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	16:15
Date Received:	08/29/01
Time Received:	08:20

* See attached Statement of Data Qualifications.

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-8B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286569
----------------	--------

7440-38-2	Arsenic, Total	23	MS	mg/kg dry
7439-92-1	Lead, Total	2610	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	16:20
Date Received:	08/29/01
Time Received:	08:20

000053



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-9A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286570
----------------	--------

7440-38-2	Arsenic, Total	29		MS	mg/kg dry
7439-92-1	Lead, Total	3630		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	16:35
Date Received:	08/29/01
Time Received:	08:20

000054

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-9B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286571

7440-38-2	Arsenic, Total	11	MS mg/kg dry
7439-92-1	Lead, Total	471	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	16:40
Date Received:	08/29/01
Time Received:	08:20



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-10A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286572

7440-38-2 Arsenic, Total

9.4

MS mg/kg dry

7439-92-1 Lead, Total

84

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

16:50

Date Received:

08/29/01

Time Received:

08:20

000056

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-10B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286573

7440-38-2 Arsenic, Total

7.2

MS mg/kg dry

7439-92-1 Lead, Total

25

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

16:55

Date Received:

08/29/01

Time Received:

08:20

000057

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SED-10C Data Qualifiers Units
C | Q | M

Lab Sample No: 286574

7440-38-2	Arsenic, Total	10			MS	mg/kg dry
7439-92-1	Lead, Total	84			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	17:00
Date Received:	08/29/01
Time Received:	08:20

000058

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-1A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286575

7440-38-2 Arsenic, Total

141

| MS mg/kg dry

7439-92-1 Lead, Total

1750

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

08:45

Date Received:

08/29/01

Time Received:

08:20

000059



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-1B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286576

7440-38-2 Arsenic, Total

50

MS mg/kg dry

7439-92-1 Lead, Total

1080

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

08:50

Date Received:

08/29/01

Time Received:

08:20

000060

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-8A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286577

7440-38-2	Arsenic, Total	13		MS	mg/kg dry
7439-92-1	Lead, Total	197		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	09:10
Date Received:	08/29/01
Time Received:	08:20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-8B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286578

7440-38-2 Arsenic, Total

8.4

MS mg/kg dry

7439-92-1 Lead, Total

51

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

09:15

Date Received:

08/29/01

Time Received:

08:20

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-9A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286579

7440-38-2	Arsenic, Total	47	MS mg/kg dry
7439-92-1	Lead, Total	3330	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	09:30
Date Received:	08/29/01
Time Received:	08:20

000063



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-9B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286580

7440-38-2	Arsenic, Total	12			MS	mg/kg dry
7439-92-1	Lead, Total	287			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	09:35
Date Received:	08/29/01
Time Received:	08:20

000064



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

R2SB-13A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286581

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

53
7390

| MS mg/kg dry
| MS mg/kg dry

Sampled by:
Date Sampled:
Time Sampled:
Date Received:
Time Received:

Vennebush
08/23/01
09:50
08/29/01
08:20

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-13B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286582

7440-38-2 Arsenic, Total

27

| MS mg/kg dry

7439-92-1 Lead, Total

875

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

09:55

Date Received:

08/29/01

Time Received:

08:20

000066

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-17A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286583

7440-38-2	Arsenic, Total	25	MS mg/kg dry
7439-92-1	Lead, Total	4160	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	10:15
Date Received:	08/29/01
Time Received:	08:20



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-17B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286584

7440-38-2 Arsenic, Total

11

MS mg/kg dry

7439-92-1 Lead, Total

267

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

10:20

Date Received:

08/29/01

Time Received:

08:20

000068

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-17C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286585

7440-38-2 Arsenic, Total

31

| MS mg/kg dry

7439-92-1 Lead, Total

3950

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

10:25

Date Received:

08/29/01

Time Received:

08:20



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-24A	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	286586
----------------	--------

7440-38-2	Arsenic, Total	13	MS	mg/kg dry
7439-92-1	Lead, Total	779	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	10:50
Date Received:	08/29/01
Time Received:	08:20

000070

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-24B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286587

7440-38-2	Arsenic, Total	9.1	MS mg/kg dry
7439-92-1	Lead, Total	117	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	10:55
Date Received:	08/29/01
Time Received:	08:20

000071

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN**Subm: August 2001 Samples****Submittal Number: 35132- 30****Location:****Contact: Jennifer L. Rice****Phone: (616) 975-4500****CAS No.****R2SB-23A****Data Qualifiers****Units****C | Q | M****Lab Sample No:****286588****7440-38-2 Arsenic, Total****10****MS mg/kg dry****7439-92-1 Lead, Total****463****MS mg/kg dry****Sampled by:****Vennebush****Date Sampled:****08/23/01****Time Sampled:****11:10****Date Received:****08/29/01****Time Received:****08:20**

000072

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-22A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286589

7440-38-2 Arsenic, Total

13

MS mg/kg dry

7439-92-1 Lead, Total

734

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

11:35

Date Received:

08/29/01

Time Received:

08:20

000073

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-22B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286590

7440-38-2 Arsenic, Total

12

MS mg/kg dry

7439-92-1 Lead, Total

188

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

11:40

Date Received:

08/29/01

Time Received:

08:20

000074

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-21A	Data Qualifiers	Units
	MS/MSD	C Q M	

Lab Sample No: 286591

7440-38-2	Arsenic, Total	10	MS mg/kg dry
7439-92-1	Lead, Total	* 296	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	11:55
Date Received:	08/29/01
Time Received:	08:20

* See attached Statement of Data Qualifications.

000075

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-21B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286592

7440-38-2	Arsenic, Total	7.0			MS	mg/kg dry
7439-92-1	Lead, Total	84			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	12:00
Date Received:	08/29/01
Time Received:	08:20

000076

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-20A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286593

7440-38-2	Arsenic, Total	9.6	MS mg/kg dry
7439-92-1	Lead, Total	486	MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	12:15
Date Received:	08/29/01
Time Received:	08:20

000077



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

R2SB-20B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286594

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

4.4
129

MS mg/kg dry
MS mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/23/01
Time Sampled: 12:20
Date Received: 08/29/01
Time Received: 08:20

000078

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-20C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286595

7440-38-2 Arsenic, Total

6.4

| MS mg/kg dry

7439-92-1 Lead, Total

447

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:25

Date Received:

08/29/01

Time Received:

08:20

000079

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-19A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286596

7440-38-2 Arsenic, Total

16

MS mg/kg dry

7439-92-1 Lead, Total

796

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:42

Date Received:

08/29/01

Time Received:

08:20

000080

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-19B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286597

7440-38-2	Arsenic, Total	14		MS	mg/kg dry
7439-92-1	Lead, Total	250		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	12:45
Date Received:	08/29/01
Time Received:	08:20

000031



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Subm: August 2001 Samples

Phone: (616) 975-4500

CAS No.

R2SB-18A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286598

7440-38-2 Arsenic, Total

10

MS mg/kg dry

7439-92-1 Lead, Total

669

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:52

Date Received:

08/29/01

Time Received:

08:20

000082

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-18B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286599

7440-38-2 Arsenic, Total

6.3

MS mg/kg dry

7439-92-1 Lead, Total

122

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:55

Date Received:

08/29/01

Time Received:

08:20

000083



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-16A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286600

7440-38-2 Arsenic, Total

7.7

MS mg/kg dry

7439-92-1 Lead, Total

179

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

14:45

Date Received:

08/29/01

Time Received:

08:20

000084

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-16B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286601
----------------	--------

7440-38-2	Arsenic, Total	9.0		MS	mg/kg dry
7439-92-1	Lead, Total	125		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	14:50
Date Received:	08/29/01
Time Received:	08:20

000085

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-15A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286602

7440-38-2 Arsenic, Total

4.8

7439-92-1 Lead, Total

265

| MS mg/kg dry

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

15:05

Date Received:

08/29/01

Time Received:

08:20

000086

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-15B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286603

7440-38-2 Arsenic, Total

14

MS mg/kg dry

7439-92-1 Lead, Total

184

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

15:10

Date Received:

08/29/01

Time Received:

08:20

000087



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-11A Data Qualifiers Units
C | Q | M

Lab Sample No: 286604

7440-38-2	Arsenic, Total	14	J	MS	mg/kg dry
7439-92-1	Lead, Total	360		MS	mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/23/01
Time Sampled: 15:30
Date Received: 08/29/01
Time Received: 08:20

000088

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-11B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286605

7440-38-2 Arsenic, Total

6.2

MS mg/kg dry

7439-92-1 Lead, Total

83

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

15:35

Date Received:

08/29/01

Time Received:

08:20

000089

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-11C Data Qualifiers Units
C | Q | M

Lab Sample No: 286606

7440-38-2	Arsenic, Total	7.5	J	MS	mg/kg dry
7439-92-1	Lead, Total	323		MS	mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/23/01
Time Sampled: 15:40
Date Received: 08/29/01
Time Received: 08:20

000090

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Individual sample results relate only to the sample tested.

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-12A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286607

7440-38-2 Arsenic, Total

11

MS mg/kg dry

7439-92-1 Lead, Total

222

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

15:50

Date Received:

08/29/01

Time Received:

08:20

000091

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-12B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286608
----------------	--------

7440-38-2	Arsenic, Total	8.6			MS	mg/kg dry
7439-92-1	Lead, Total	71			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:55
Date Received:	08/29/01
Time Received:	08:20

000092

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-5A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286609

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

10

121

| MS mg/kg dry

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

16:10

Date Received:

08/29/01

Time Received:

08:20

000093

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-5B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286610

7440-38-2 Arsenic, Total

5.5

MS mg/kg dry

7439-92-1 Lead, Total

68

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

16:15

Date Received:

08/29/01

Time Received:

08:20

000094

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-14A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286611

7440-38-2 Arsenic, Total

8.6

MS mg/kg dry

7439-92-1 Lead, Total

89

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

16:30

Date Received:

08/29/01

Time Received:

08:20

000095

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-14B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286612

7440-38-2	Arsenic, Total	3.6		MS	mg/kg dry
7439-92-1	Lead, Total	7.3		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	16:35
Date Received:	08/29/01
Time Received:	08:20

000096

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-10A

Data Qualifiers

Units

MS/MSD

C

Q

M

Lab Sample No:

286613

7440-38-2 Arsenic, Total

8.9

MS mg/kg dry

7439-92-1 Lead, Total

25

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

16:45

Date Received:

08/29/01

Time Received:

08:20

000097



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-10B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286614
----------------	--------

7440-38-2	Arsenic, Total	12			MS	mg/kg dry
7439-92-1	Lead, Total	10			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	16:50
Date Received:	08/29/01
Time Received:	08:20

000098

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-7A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286615

7440-38-2	Arsenic, Total	9.6		MS	mg/kg dry
7439-92-1	Lead, Total	78	J	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:10
Date Received:	08/29/01
Time Received:	08:20



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-7B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286616

7440-38-2	Arsenic, Total	13		MS	mg/kg dry
7439-92-1	Lead, Total	35		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:15
Date Received:	08/29/01
Time Received:	08:20

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-7C

Data Qualifiers
C | Q | M

Units

Lab Sample No:

286617

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total8.4
49| MS mg/kg dry
| J MS mg/kg drySampled by:
Date Sampled:
Time Sampled:
Date Received:
Time Received:Vennebush
08/23/01
17:20
08/29/01
08:20

000101

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-6A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286618

7440-38-2	Arsenic, Total	12		MS	mg/kg dry
7439-92-1	Lead, Total	587		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:35
Date Received:	08/29/01
Time Received:	08:20

000102

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-6B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286619
----------------	--------

7440-38-2	Arsenic, Total	11		MS	mg/kg dry
7439-92-1	Lead, Total	286		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:40
Date Received:	08/29/01
Time Received:	08:20

000103



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-3A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286620

7440-38-2	Arsenic, Total	38			MS	mg/kg dry
7439-92-1	Lead, Total	991			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:43
Date Received:	08/29/01
Time Received:	08:20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-3B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286621

7440-38-2	Arsenic, Total	10		MS	mg/kg dry
7439-92-1	Lead, Total	1760		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:55
Date Received:	08/29/01
Time Received:	08:20



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-4A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286622

7440-38-2	Arsenic, Total	26		MS	mg/kg dry
7439-92-1	Lead, Total	1980		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:50
Date Received:	08/29/01
Time Received:	08:20

000106

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-4B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286623
----------------	--------

7440-38-2	Arsenic, Total	12		MS	mg/kg dry
7439-92-1	Lead, Total	1380		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	17:55
Date Received:	08/29/01
Time Received:	08:20

000107

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-2A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286624

7440-38-2 Arsenic, Total

19

MS mg/kg dry

7439-92-1 Lead, Total

1290

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

18:05

Date Received:

08/29/01

Time Received:

08:20

000108

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-2B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286625

7440-38-2	Arsenic, Total	10		MS	mg/kg dry
7439-92-1	Lead, Total	2760		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	18:10
Date Received:	08/29/01
Time Received:	08:20

000109

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2BG-1A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286626
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7440-38-2	Arsenic, Total	9.8		MS	mg/kg dry
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Sampled by:	Vennebush
Date Sampled:	08/24/01
Time Sampled:	08:45
Date Received:	08/29/01
Time Received:	08:20

000110



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2BG-1B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286627

7440-38-2	Arsenic, Total	8.0	MS mg/kg dry
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Sampled by:	Vennebush
Date Sampled:	08/24/01
Time Sampled:	09:15
Date Received:	08/29/01
Time Received:	08:20

000111

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2BG-2A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286628

7440-38-2 Arsenic, Total

10

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/24/01

Time Sampled:

10:05

Date Received:

08/29/01

Time Received:

08:20

000112

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2BG-2B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286629

7440-38-2	Arsenic, Total	7.2	MS mg/kg dry
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Sampled by:	Vennebush
Date Sampled:	08/24/01
Time Sampled:	10:20
Date Received:	08/29/01
Time Received:	08:20

000113



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2BG-3A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286630
----------------	--------

7440-38-2	Arsenic, Total	6.0	MS mg/kg dry
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Sampled by:	Vennebush
Date Sampled:	08/24/01
Time Sampled:	11:10
Date Received:	08/29/01
Time Received:	08:20

000114

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2BG-3B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286631

7440-38-2 Arsenic, Total

7.5

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/24/01

Time Sampled:

11:30

Date Received:

08/29/01

Time Received:

08:20

000115

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2BG-4A	Data Qualifiers	Units
	MS/MSD	C Q M	

Lab Sample No: 286632

7440-38-2 Arsenic, Total 3.1 | MS mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/24/01
Time Sampled:	12:05
Date Received:	08/29/01
Time Received:	08:20

000116

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2BG-4B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286633

7440-38-2	Arsenic, Total	6.6		MS	mg/kg dry
-----------	----------------	-----	--	----	-----------

Sampled by:	Vennebush
Date Sampled:	08/24/01
Time Sampled:	12:20
Date Received:	08/29/01
Time Received:	08:20

000117

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2BG-4C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286634

7440-38-2

Arsenic, Total

4.6

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/24/01

Time Sampled:

12:30

Date Received:

08/29/01

Time Received:

08:20

000118

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-38A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286635

7440-38-2 Arsenic, Total

6.5

MS mg/kg dry

7439-92-1 Lead, Total

282

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:15

Date Received:

08/29/01

Time Received:

08:20

000119

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-38B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286636

7440-38-2 Arsenic, Total

5.2

MS mg/kg dry

7439-92-1 Lead, Total

175

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:20

Date Received:

08/29/01

Time Received:

08:20

000120

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-38C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286637

7440-38-2 Arsenic, Total

6.6

MS mg/kg dry

7439-92-1 Lead, Total

271

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:25

Date Received:

08/29/01

Time Received:

08:20

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-37A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286638

7440-38-2 Arsenic, Total

9.2

MS mg/kg dry

7439-92-1 Lead, Total

366

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:40

Date Received:

08/29/01

Time Received:

08:20

000122



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-37B Data Qualifiers Units
C | Q | M

Lab Sample No: 286639

7440-38-2	Arsenic, Total	8.0		MS	mg/kg dry
7439-92-1	Lead, Total	509		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	08:45
Date Received:	08/29/01
Time Received:	08:20

000123

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-39A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286640

7440-38-2 Arsenic, Total

8.7

| MS mg/kg dry

7439-92-1 Lead, Total

383

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:55

Date Received:

08/29/01

Time Received:

08:20

000124



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-39B Data Qualifiers Units
C | Q | M

Lab Sample No: 286641

7440-38-2	Arsenic, Total	7.9			MS	mg/kg dry
7439-92-1	Lead, Total	144			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	09:00
Date Received:	08/29/01
Time Received:	08:20

000125



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-44A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286642

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

7.8
252

| MS mg/kg dry
| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

09:15

Date Received:

08/29/01

Time Received:

08:20

000126

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-44B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286643

7440-38-2	Arsenic, Total	8.5		MS	mg/kg dry
7439-92-1	Lead, Total	108		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	09:20
Date Received:	08/29/01
Time Received:	08:20

000127

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-43A	Data Qualifiers	Units
	MS/MSD	C Q M	

Lab Sample No: 286644

7440-38-2	Arsenic, Total	7.4			MS	mg/kg dry
7439-92-1	Lead, Total	* 250			MS	mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/27/01
Time Sampled: 09:35
Date Received: 08/29/01
Time Received: 08:20

* See attached Statement of Data Qualifications.

000128



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-43B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286645

7440-38-2	Arsenic, Total	7.4		MS	mg/kg dry
7439-92-1	Lead, Total	201		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	09:45
Date Received:	08/29/01
Time Received:	08:20

000129

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-45A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286646

7440-38-2	Arsenic, Total	7.3		MS	mg/kg dry
7439-92-1	Lead, Total	140		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	10:25
Date Received:	08/29/01
Time Received:	08:20

000130



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

R2SB-45B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286647

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

6.2
85

MS mg/kg dry
MS mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/27/01
Time Sampled: 10:30
Date Received: 08/29/01
Time Received: 08:20

000131

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Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE • Grand Rapids, MI 49512 • (616) 975-4500 • Fax (616) 942-7463

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-41A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286648
----------------	--------

7440-38-2	Arsenic, Total	5.9		MS	mg/kg dry
7439-92-1	Lead, Total	172		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:05
Date Received:	08/29/01
Time Received:	08:20

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-41B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286649

7440-38-2 Arsenic, Total

5.9

| MS mg/kg dry

7439-92-1 Lead, Total

128

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

11:10

Date Received:

08/29/01

Time Received:

08:20

000133



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-36A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286650

7440-38-2	Arsenic, Total	7.8		MS	mg/kg dry
7439-92-1	Lead, Total	310		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:20
Date Received:	08/29/01
Time Received:	08:20

000134



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-36B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286651

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

6.1
109

| MS mg/kg dry
| MS mg/kg dry

Sampled by: Vennebush
Date Sampled: 08/27/01
Time Sampled: 11:25
Date Received: 08/29/01
Time Received: 08:20

000135



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-36C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286652

7440-38-2 Arsenic, Total

9.0

MS mg/kg dry

7439-92-1 Lead, Total

328

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

11:30

Date Received:

08/29/01

Time Received:

08:20

000136

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-42A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286653

7440-38-2 Arsenic, Total

4.2

| MS mg/kg dry

7439-92-1 Lead, Total

165

| MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

11:40

Date Received:

08/29/01

Time Received:

08:20

000137

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-42B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 286654

7440-38-2	Arsenic, Total	3.9	MS	mg/kg dry
7439-92-1	Lead, Total	77	MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:45
Date Received:	08/29/01
Time Received:	08:20

000138

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-35A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286655
----------------	--------

7440-38-2	Arsenic, Total	3.7		MS	mg/kg dry
7439-92-1	Lead, Total	191		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:52
Date Received:	08/29/01
Time Received:	08:20

000139



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-35B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286656
----------------	--------

7440-38-2	Arsenic, Total	4.7		MS	mg/kg dry
7439-92-1	Lead, Total	79		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:55
Date Received:	08/29/01
Time Received:	08:20

000140



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-40A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286657

7440-38-2 Arsenic, Total

6.9

MS mg/kg dry

7439-92-1 Lead, Total

422

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

12:50

Date Received:

08/29/01

Time Received:

08:20

000141



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-40B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286658
----------------	--------

7440-38-2	Arsenic, Total	4.0			MS	mg/kg dry
7439-92-1	Lead, Total	50			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	12:55
Date Received:	08/29/01
Time Received:	08:20

000142

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-32A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286659

7440-38-2 Arsenic, Total

4.9

MS mg/kg dry

7439-92-1 Lead, Total

286

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

13:05

Date Received:

08/29/01

Time Received:

08:20

000143

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Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE • Grand Rapids, MI 49512 • (616) 975-4500 • Fax (616) 942-7463



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-32B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 286660

7440-38-2	Arsenic, Total	4.2		MS	mg/kg dry
7439-92-1	Lead, Total	91		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:10
Date Received:	08/29/01
Time Received:	08:20

000144



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-33A	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286661
----------------	--------

7440-38-2	Arsenic, Total	6.3		MS	mg/kg dry
7439-92-1	Lead, Total	202		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:20
Date Received:	08/29/01
Time Received:	08:20

000145

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-33B	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286662
----------------	--------

7440-38-2	Arsenic, Total	5.7		MS	mg/kg dry
7439-92-1	Lead, Total	67		MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:22
Date Received:	08/29/01
Time Received:	08:20

000146

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-33C	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286663
----------------	--------

7440-38-2	Arsenic, Total	4.5			MS	mg/kg dry
7439-92-1	Lead, Total	250			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:25
Date Received:	08/29/01
Time Received:	08:20

000147



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-34A	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	286664
----------------	--------

7440-38-2	Arsenic, Total	7.1			MS	mg/kg dry
7439-92-1	Lead, Total	* 170			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:55
Date Received:	08/29/01
Time Received:	08:20

* See attached Statement of Data Qualifications.

000148



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-34B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 286665

7440-38-2	Arsenic, Total	4.1			MS	mg/kg dry
7439-92-1	Lead, Total	28			MS	mg/kg dry

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	14:05
Date Received:	08/29/01
Time Received:	08:20

000149

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB-1-JLV

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286666

7440-38-2 Arsenic, Total

<1.0

| MS ug/L

7439-92-1 Lead, Total

11

| MS ug/L

Sampled by:

Vennebush

Date Sampled:

08/21/01

Time Sampled:

15:05

Date Received:

08/29/01

Time Received:

08:20

000150

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	EB-2-JLV	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 286667

7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	5.8		MS	ug/L

Sampled by:	Vennebush
Date Sampled:	08/21/01
Time Sampled:	17:10
Date Received:	08/29/01
Time Received:	08:20

000151

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	EB-3-JLV	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 286668

7440-38-2	Arsenic, Total	<1.0			MS	ug/L
7439-92-1	Lead, Total	2.8			MS	ug/L

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	10:35
Date Received:	08/29/01
Time Received:	08:20

000152



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB-4-JLV

Data Qualifiers
C | Q | M

Units

Lab Sample No:

286669

7440-38-2 Arsenic, Total

<1.0

MS ug/L

7439-92-1 Lead, Total

2.3

MS ug/L

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

12:35

Date Received:

08/29/01

Time Received:

08:20

000153

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	EB-5-JLV	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286670
----------------	--------

7440-38-2	Arsenic, Total	<1.0			MS	ug/L
7439-92-1	Lead, Total	1.7			MS	ug/L

Sampled by:	Vennebush
Date Sampled:	08/23/01
Time Sampled:	15:45
Date Received:	08/29/01
Time Received:	08:20

000154



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB-6-JLV

Data Qualifiers
C | Q | M

Units

Lab Sample No:

286671

7440-38-2 Arsenic, Total

<1.0

MS ug/L

7439-92-1 Lead, Total

1.6

MS ug/L

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

17:30

Date Received:

08/29/01

Time Received:

08:20

000155

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB-7-JLV

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286672

7440-38-2 Arsenic, Total

<1.0

MS ug/L

7439-92-1 Lead, Total

8.6

MS ug/L

Sampled by:

Vennebush

Date Sampled:

08/24/01

Time Sampled:

12:30

Date Received:

08/29/01

Time Received:

08:20

000156



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB-8-JLV

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286673

7440-38-2 Arsenic, Total

<1.0

MS ug/L

7439-92-1 Lead, Total

<1.0

MS ug/L

Sampled by:

Vennebush

Date Sampled:

08/27/01

Time Sampled:

08:35

Date Received:

08/29/01

Time Received:

08:20

000157



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	EB-9-JLV	Data Qualifiers	Units
		C Q M	

Lab Sample No:	286674
----------------	--------

7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	11:35
Date Received:	08/29/01
Time Received:	08:20

000158



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB-10-JLV Data Qualifiers Units
C | Q | M

Lab Sample No: 286675

7440-38-2	Arsenic, Total	<1.0			MS ug/L
7439-92-1	Lead, Total	2.9			MS ug/L

Sampled by:	Vennebush
Date Sampled:	08/27/01
Time Sampled:	13:30
Date Received:	08/29/01
Time Received:	08:20

000159

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: August 2001 Samples

Submittal Number: 35132- 30
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	Field Blank	Data Qualifiers C Q M	Units
---------	----------------	------------------------------	-------

Lab Sample No: 286676

7440-38-2	Arsenic, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	<1.0	MS ug/L

Sampled by:	Vennebush
Date Sampled:	08/28/01
Time Sampled:	11:40
Date Received:	08/29/01
Time Received:	08:20

000160



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: August 2001 Samples

Submittal Number: 35132- 30

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-23B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

286688

7440-38-2 Arsenic, Total

13

MS mg/kg dry

7439-92-1 Lead, Total

105

MS mg/kg dry

Sampled by:

Vennebush

Date Sampled:

08/23/01

Time Sampled:

11:15

Date Received:

08/30/01

Time Received:

07:50

000161

SERIAL DILUTIONS

Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	
As	286568	R2SED-8-A	36.1	37.95	5.22	0.097	4.85	Acceptable
Pb	286568	R2SED-8-A	8797.24	9510.73	8.11	0.029	1.45	Acceptable
As	286664	R2SB-34-A	7.1	6.77	4.35	0.097	4.85	Acceptable
Pb	286664	R2SB-34-A	196.07	170.04	13.27	0.029	1.45	Qualify
As	286644	R2SB-43-A	7.4	7.47	1.11	0.097	4.85	Acceptable
Pb	286644	R2SB-43-A	299.38	250.24	16.41	0.029	1.45	Qualify
As	286632	R2BG-4-A	3.1	2.79	10.11	0.097	4.85	Acceptable
Pb	286632	R2BG-4-A	63.80	65.19	2.17	0.029	1.45	Acceptable
As	286625	R2SB-2-B	10.4	10.38	0.39	0.097	4.85	Acceptable
Pb	286625	R2SB-2-B	2413.23	2821.16	16.90	0.029	1.45	Qualify
As	286613	R2SB-10-A	8.9	7.97	10.62	0.097	4.85	Qualify
Pb	286613	R2SB-10-A	25.49	22.84	10.41	0.029	1.45	Qualify
As	286591	R2SB-21-A	10.3	10.42	1.11	0.097	4.85	Acceptable
Pb	286591	R2SB-21-A	325.41	295.61	9.16	0.029	1.45	Acceptable

Field Duplicates

Criteria	Aqueous	Solid
Both results < 5*EQL	$\pm 1.5 \cdot \text{EQL}$	$\pm 2.5 \cdot \text{EQL}$
Both results > 5*EQL	$\pm 25\%$	$\pm 40\%$
One result < EQL, one result > EQL	$\pm 1.5 \cdot \text{EQL}$	$\pm 2.5 \cdot \text{EQL}$

	R2BG-4-B	R2BG-4-C	EQL	5*EQL	2.5*EQL	Difference	
Arsenic	6.6	4.6	1	5	2.5	2.00	Acceptable
	R2SB-11-A	R2SB-11-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	14	7.5	1	5	2.5	60.47	Qualify
Lead	360	323	1	5	2.5	10.83	Acceptable
	R2SB-17-A	R2SB-17-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	25	31	1	5	2.5	21.43	Acceptable
Lead	4160	3950	1	5	2.5	5.18	Acceptable
	R2SB-20-A	R2SB-20-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	9.6	6.4	1	5	2.5	40.00	Acceptable
Lead	486	447	1	5	2.5	8.36	Acceptable
	R2SB-33-A	R2SB-33-C	EQL	5*EQL	2.5*EQL	ference or RPD	
Arsenic	6.3	4.5	1	5	2.5	1.80	Acceptable
Lead	202	250	1	5	2.5	21.24	Acceptable
	R2SB-36-A	R2SB-36-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	7.8	9	1	5	2.5	14.29	Acceptable
Lead	310	328	1	5	2.5	5.64	Acceptable
	R2SB-38-A	R2SB-38-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	6.5	6.6	1	5	2.5	1.53	Acceptable
Lead	282	271	1	5	2.5	3.98	Acceptable
	R2SB-7-A	R2SB-7-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	9.6	8.4	1	5	2.5	13.33	Acceptable
Lead	78	49	1	5	2.5	45.67	Qualify

Equipment Blank Contamination

Blank ID	Parameter	Conc	Units	Associated Samples	% Solids	Weight	Volume	DF	BC	BC * 5	Sample Conc
EB-1-JLV	Lead	11	µg/L	R2SED-1A	1	0.4002	0.05	200	275	1374	1210
				R2SED-1B	1	0.3997	0.05	200	275	1376	1550
				R2SED-2A	1	0.4003	0.05	200	275	1374	1230
				R2SED-2B	1	0.4002	0.05	200	275	1374	955
				R2SED-3A	1	0.4005	0.05	200	275	1373	1570
				R2SED-3B	1	0.3997	0.05	1000	1376	6880	6020
				R2SED-4A	1	0.4003	0.05	500	687	3435	2480
				R2SED-4B	1	0.4003	0.05	200	275	1374	1570
EB-2-JLV	Lead	5.8	µg/L	R2SED-5A	1	0.4002	0.05	1000	725	3623	5410
				R2SED-5B	1	0.4005	0.05	200	145	724	1240
				R2SED-5C	1	0.4004	0.05	500	362	1811	5030
				R2SED-6A	1	0.3995	0.05	1000	726	3630	8430
				R2SED-6B	1	0.4082	0.05	500	355	1776	3840
				R2SED-7A	1	0.3999	0.05	1000	725	3626	5480
				R2SED-7B	1	0.4003	0.05	500	362	1811	2340
				R2SED-8A	1	0.4002	0.05	1000	725	3623	8190
				R2SED-8B	1	0.3999	0.05	500	363	1813	2610
				R2SED-9A	1	0.4002	0.05	500	362	1812	3630
				R2SED-9B	1	0.4	0.05	50	36	181	471
				R2SED-10A	1	0.4003	0.05	10	7	36	84
				R2SED-10B	1	0.4004	0.05	5	4	18	25
				R2SED-10C	1	0.4001	0.05	10	7	36	84
EB-3-JLV	Lead	2.8	µg/L	R2SB-1A	1	0.4002	0.05	200	70	350	1750
				R2SB-1B	1	0.4005	0.05	200	70	350	1080
				R2SB-8A	1	0.4005	0.05	25	9	44	197
				R2SB-8B	1	0.4002	0.05	5	2	9	51
				R2SB-9A	1	0.4004	0.05	500	175	874	3330
				R2SB-9B	1	0.4002	0.05	50	17	87	287
				R2SB-13A	1	0.4001	0.05	1000	350	1750	7390
				R2SB-13B	1	0.4005	0.05	100	35	175	875
				R2SB-17A	1	0.4003	0.05	500	175	874	4160
				R2SB-17B	1	0.3995	0.05	25	9	44	267
				R2SB-17C	1	0.4001	0.05	500	175	875	3950
EB-4-JLV	Lead	2.3	µg/L	R2SB-24A	1	0.4005	0.05	100	29	144	779
				R2SB-24B	1	0.3997	0.05	25	7	36	117
				R2SB-23A	1	0.4004	0.05	50	14	72	463
				R2SB-23B	1	0.4005	0.05	10	3	14	105
				R2SB-22A	1	0.4003	0.05	100	29	144	734
				R2SB-22B	1	0.4005	0.05	25	7	36	188
				R2SB-21A	1	0.4005	0.05	5	1	7	296
				R2SB-21B	1	0.3995	0.05	5	1	7	84
				R2SB-20A	1	0.4005	0.05	50	14	72	486
				R2SB-20B	1	0.4005	0.05	25	7	36	129
				R2SB-20C	1	0.4	0.05	50	14	72	447
EB-5-JLV	Lead	1.7	µg/L	R2SB-19A	1	0.4003	0.05	100	21	106	796
				R2SB-19B	1	0.4005	0.05	25	5	27	250
				R2SB-18A	1	0.4005	0.05	100	21	106	669
				R2SB-18B	1	0.4003	0.05	25	5	27	122
				R2SB-16A	1	0.4003	0.05	25	5	27	179
				R2SB-16B	1	0.4005	0.05	25	5	27	125
				R2SB-15A	1	0.4002	0.05	25	5	27	265

Equipment Blank Contamination

Blank ID	Parameter	Conc	Units	Associated Samples	% Solids	Weight	Volume	DF	BC	BC * 5	Sample Conc
				R2SB-15B	1	0.4005	0.05	25	5	27	184
				R2SB-11A	1	0.4003	0.05	50	11	53	360
				R2SB-11B	1	0.4003	0.05	10	2	11	83
				R2SB-11C	1	0.4005	0.05	50	11	53	323
EB-6-JLV	Lead	1.6	µg/L	R2SB-12A	1	0.4005	0.05	25	5	25	222
				R2SB-12B	1	0.4004	0.05	10	2	10	71
				R2SB-5A	1	0.4005	0.05	25	5	25	121
				R2SB-5B	1	0.4004	0.05	10	2	10	68
				R2SB-14A	1	0.3999	0.05	10	2	10	89
				R2SB-14B	1	0.4	0.05	5	1	5	7.3
				R2SB-10A	1	0.4002	0.05	5	1	5	25
				R2SB-10B	1	0.4005	0.05	5	1	5	10
				R2SB-7A	1	0.4	0.05	10	2	10	78
				R2SB-7B	1	0.4005	0.05	5	1	5	35
				R2SB-7C	1	0.4003	0.05	5	1	5	49
				R2SB-6A	1	0.4004	0.05	50	10	50	587
				R2SB-6B	1	0.4002	0.05	25	5	25	286
				R2SB-3A	1	0.4005	0.05	100	20	100	991
				R2SB-3B	1	0.4001	0.05	200	40	200	1760
				R2SB-4A	1	0.4002	0.05	200	40	200	1980
				R2SB-4B	1	0.3995	0.05	200	40	200	1380
				R2SB-2A	1	0.4005	0.05	200	40	200	1290
				R2SB-2B	1	0.4005	0.05	500	100	499	2760
EB-7-JLV	Lead	8.6	µg/L	R2BG-1A							NA
				R2BG-1B							NA
				R2BG-2A							NA
				R2BG-2B							NA
				R2BB-3A							NA
				R2BG-3B							NA
				R2BB-4A							NA
				R2BG-4B							NA
				R2BG-4C							NA
EB-10-JLV	Lead	2.9	µg/L	R2SB-42A	1	0.4002	0.05	25	9	45	165
				R2SB-42B	1	0.4	0.05	10	4	18	77
				R2SB-35A	1	0.4	0.05	25	9	45	191
				R2SB-35B	1	0.4002	0.05	10	4	18	79
				R2SB-40A	1	0.4003	0.05	50	18	91	422
				R2SB-40B	1	0.4	0.05	5	2	9	50
				R2SB-32A	1	0.4005	0.05	50	18	91	286
				R2SB-32B	1	0.4004	0.05	10	4	18	91
				R2SB-33A	1	0.4005	0.05	25	9	45	202
				R2SB-33B	1	0.4005	0.05	10	4	18	67
				R2SB-33C	1	0.4003	0.05	50	18	91	250
				R2SB-34A	1	0.4002	0.05	5	2	9	170
				R2SB-34B	1	0.4005	0.05	5	2	9	28



APPENDIX C
Data Validation Report of Groundwater and Soil Samples Collected
on September 22 and 24, 2001

DATA VALIDATION REPORT
OF
GROUNDWATER AND SOIL SAMPLES
COLLECTED ON SEPTEMBER 22 AND 24, 2001
FOR
INORGANIC ANALYSES

Sample Delivery Group No. 35132-31

PREPARED FOR:

Refined Metals Corporation
Beech Grove, Indiana

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

November 6, 2001
Project Number 2001-824-00

DATA VALIDATION REPORT INORGANICS

INTRODUCTION

This data validation report addresses the inorganic results from the groundwater and soil samples collected on September 22 and 24, 2001, as part of the RMC Beech Grove, Indiana, Pre-Remedial Design (RD) sampling event. The soil samples were analyzed by Trimatrix in Grand Rapids, Michigan for lead and arsenic by USEPA SW-846 method 6020. Groundwater samples were analyzed for inorganics (antimony, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver) by USEPA SW-846 methods 6020 and 7000 series. The data were reported by Trimatrix under sample delivery group (SDG) 35132-31.

This review has been performed with guidance from the Indiana Department of Environmental Management's *Guidance to the Performance and Presentation of Analytical Chemistry Data* (July 1998) and the U.S. EPA's *National Functional Guideline for Inorganic Data Review* (Feb. 1994). The findings presented in this report are based upon a review of all data supplied by the laboratory.

1. Timeliness

All samples were prepared and analyzed within holding time limits of 6 months (28 days for mercury).

2. Sample Preparation

All sample preparation procedures were in accordance with the method protocols.

3. Calibration

Soil samples were analyzed for arsenic and lead by ICP-MS. The groundwater samples were analyzed for antimony, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver by ICP-MS and CVAA. The instruments were standardized according to the analytical method using one blank and a single calibration standard for each element. All calibrations (ICVs) were performed as required and met the criteria for acceptance.

4. Reference Control Samples/Calibration Verification

Reference control samples (CCVs) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. Control limits for the ICP-MS reference sample are 90-110 percent (80-120 percent for mercury) of the certified value. All recoveries met the acceptance criteria for control samples.

5. Blanks

No target analytes were detected in laboratory or field blanks.

6. ICP Interference Check Sample

The interference check sample (LCS) is analyzed by ICP-MS to verify interelement and background correction factors. Analysis was performed as required at the beginning and end of each sample analysis run and recoveries were within the specified criteria of 80-120 percent.

7. Duplicate Analysis

The relative percent differences (RPDs) were within the control limit of 20 percent for aqueous samples and 35 percent for solid samples.

8. Field Duplicates

Sample MW-3/MW-3A and R2SB-46-B/R2SB-46-C were field duplicates. Results exhibited reasonable agreement.

9. Matrix Spike Analysis

The matrix spike (MS) percent recoveries were within the QC limits of 75-125 percent (soil matrices) and 80-120 percent (aqueous matrices), with the exception of the following:

Matrix	MS or MSD	Parameter	Spike Added	Sample Conc	Spiked Conc	%R
GW	MS	Silver	50	0.2 U	18.1	36%
GW	MSD	Silver	50	0.2 U	17.3	35%
GW	MS	Selenium	50	3.7	69.5	132%
GW	MSD	Selenium	50	3.7	67.3	127%
Soil	MSD	Arsenic	31.2	9.0	31.0	71%

The associated sample results and reporting limits were qualified as estimated (J/UJ).

10. Laboratory Control Sample (LCS)

The laboratory control sample (LCS) percent recoveries were within the QC limits of 80-120 percent.

11. ICP Serial Dilution

All concentrations were either less than 50 times the instrument detection limit (IDL) or greater than 50 times the IDL with the percent differences that were ± 10 percent of the serial dilution result.

DATA VALIDATION REPORT VALIDATION SUMMARY

SUMMARY

All the data is useable as qualified.

DATA QUALIFIERS

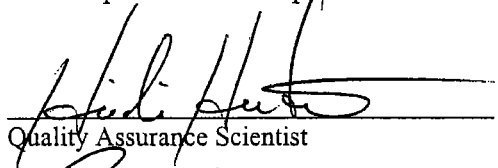
The following qualifiers were used to modify the data quality and usefulness of individual analytical results.

- U - The analyte was not detected at the given quantitation limit.
- J - The analyte was positively identified and detected; however, the concentration is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.
- UJ - The analyte was not detected; the associated quantitation limit is an estimated value.
- D - The value was obtained from a reanalysis of a diluted sample.
- E - Concentration reported is estimated, the concentration exceeded the instrument's calibration range. The sample should be diluted.
- R - The value reported has been rejected.

DATA ASSESSMENT

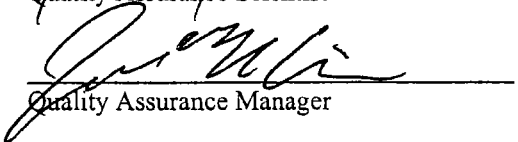
Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory and not directly involved in the project.

This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgement the data are acceptable for use except where qualified with qualifiers which modify the usefulness of those individual values.



Quality Assurance Scientist

11/6/01
Date



Quality Assurance Manager

11/6/2001
Date

INORGANIC DATA VALIDATION SUMMARY

Site Name: RMC Beorchgore
 Project Number: _____
 Sampling Date(s): _____

Laboratory: Trimatrix
 Case /Order No.: 35132-31

Compound List: ☐ TAL ☐ Priority Pollutant ☐ Appendix IX ☒ Other Pb, As
 Method: ☐ CLP SOW ILMO4. ☐ 40 CFR 136 ☒ SW-846 Method 6010 ☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			
Initial Calibrations	✓			
Continuing Calibrations	✓			
CRDL Standards	✓			
Blank Analysis Results	✓			
ICP Interference Check Sample Recoveries	✓			
Duplicate Results	✓			
Field Duplicate Results	✓			
Spike Analysis Recoveries	✓		✓	
Serial Dilution Results	✓			
Laboratory Control Sample Results	✓			
Furnace AA QC Analysis	✓			
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments: _____

Accept - No qualification required.
 FYI - For your information only, no qualification necessary.
 Qualify - Qualify as rejected, estimated or biased
 NA - Not applicable.
 NR - Not reviewed.

QA Scientist: [Signature]
 Date: 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-9	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288677

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	7.7	MS ug/L
7440-39-3	Barium, Total	137	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	1.6	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2 UJ	MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	09:40
Date Received:	09/25/01
Time Received:	08:30

HLR 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		MW-1	Data Qualifiers			Units
			C	Q	M	
	Lab Sample No:	288678				
7440-36-0	Antimony, Total	<10			MS	ug/L
7440-38-2	Arsenic, Total	33			MS	ug/L
7440-39-3	Barium, Total	101			MS	ug/L
7440-43-9	Cadmium, Total	0.2			MS	ug/L
7440-47-3	Chromium, Total	3.1			MS	ug/L
7439-92-1	Lead, Total	5.9			MS	ug/L
7439-97-6	Mercury, Total	<0.2			CV	ug/L
7782-49-2	Selenium, Total	6.1		J	MS	ug/L
7440-22-4	Silver, Total	<0.2		UJ	MS	ug/L

Sampled by: BMG/SM
Date Sampled: 09/22/01
Time Sampled: 11:19
Date Received: 09/25/01
Time Received: 08:30

* See attached Statement of Data Qualifications.

HLH 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM.1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-2	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288679

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	12	MS ug/L
7440-39-3	Barium, Total	31	MS ug/L
7440-43-9	Cadmium, Total	0.3	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	49	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	12:36
Date Received:	09/25/01
Time Received:	08:30

HLT 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.		MW-7 MS/MSD	Data Qualifiers C Q M	Units
	Lab Sample No:	288680		
7440-36-0	Antimony, Total	<10		MS ug/L
7440-38-2	Arsenic, Total	25		MS ug/L
7440-39-3	Barium, Total	21		MS ug/L
7440-43-9	Cadmium, Total	<0.2		MS ug/L
7440-47-3	Chromium, Total	<1.0		MS ug/L
7439-92-1	Lead, Total	19		MS ug/L
7439-97-6	Mercury, Total	<0.2		CV ug/L
7782-49-2	Selenium, Total	3.7	J	MS ug/L
7440-22-4	Silver, Total	*<0.2	U J	MS ug/L

Sampled by: BMG/SM
Date Sampled: 09/22/01
Time Sampled: 13:38
Date Received: 09/25/01
Time Received: 08:30

* See attached Statement of Data Qualifications.

H2H 11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-8	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 288681

7440-36-0	Antimony, Total	14			MS	ug/L
7440-38-2	Arsenic, Total	5.1			MS	ug/L
7440-39-3	Barium, Total	133			MS	ug/L
7440-43-9	Cadmium, Total	0.8			MS	ug/L
7440-47-3	Chromium, Total	<1.0			MS	ug/L
7439-92-1	Lead, Total	21			MS	ug/L
7439-97-6	Mercury, Total	<0.2			CV	ug/L
7782-49-2	Selenium, Total	<2.0			MS	ug/L
7440-22-4	Silver, Total	<0.2		VJ	MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/22/01
Time Sampled:	16:31
Date Received:	09/25/01
Time Received:	08:30

HLH 11/6/0



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-3	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288682

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	9.7	MS	ug/L
7440-39-3	Barium, Total	102	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	1.3	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L

Sampled by: BMG/SM
Date Sampled: 09/22/01
Time Sampled: 16:31
Date Received: 09/25/01
Time Received: 08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-3A	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288683

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	9.8	MS	ug/L
7440-39-3	Barium, Total	101	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	1.4	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	4.7	J MS	ug/L
7440-22-4	Silver, Total	<0.2	UJ MS	ug/L

Sampled by: BMG/SM
Date Sampled: 09/22/01
Time Sampled: 16:51
Date Received: 09/25/01
Time Received: 08:30

* See attached Statement of Data Qualifications.

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM.1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB1-092201 Data Qualifiers Units
C | Q | M

Lab Sample No:

288684

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-39-3	Barium, Total	<10		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2	UJ	MS	ug/L

Sampled by:

BMG/SM

Date Sampled:

09/22/01

Time Sampled:

17:00

Date Received:

09/25/01

Time Received:

08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-5	Data Qualifiers	Units
		C Q M	
Lab Sample No:	288685		
7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	7.6	MS ug/L
7440-39-3	Barium, Total	170	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	2.0	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	10:26
Date Received:	09/25/01
Time Received:	08:30

ALH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	MW-4	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 288686

7440-36-0	Antimony, Total	<10			MS	ug/L
7440-38-2	Arsenic, Total	<1.0			MS	ug/L
7440-39-3	Barium, Total	197			MS	ug/L
7440-43-9	Cadmium, Total	<0.2			MS	ug/L
7440-47-3	Chromium, Total	<1.0			MS	ug/L
7439-92-1	Lead, Total	<1.0			MS	ug/L
7439-97-6	Mercury, Total	<0.2			CV	ug/L
7782-49-2	Selenium, Total	<2.0			MS	ug/L
7440-22-4	Silver, Total	<0.2		UJ	MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	11:29
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-6	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288687

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	1.9	MS	ug/L
7440-39-3	Barium, Total	92	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	12:55
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB2-092401 Data Qualifiers Units
C | Q | M

Lab Sample No: 288688

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-39-3	Barium, Total	<10		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2	UJ	MS	ug/L

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

13:30

Date Received:

09/25/01

Time Received:

08:30

ALH
11/4/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Subm: 9/22-24/01 Samples

Phone: (616) 975-4500

CAS No.

R2SB-46-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288689

7440-38-2 Arsenic, Total

6.9

J

MS mg/kg dry

7439-92-1 Lead, Total

34

MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

14:35

Date Received:

09/25/01

Time Received:

08:30

HUH
1/6/



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

R2SB-46-B Data Qualifiers Units
C | Q | M

Lab Sample No: 288690

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

6.5 | J | MS mg/kg dry
41 | | MS mg/kg dry

Sampled by: BMG/SM
Date Sampled: 09/24/01
Time Sampled: 14:41
Date Received: 09/25/01
Time Received: 08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Subm: 9/22-24/01 Samples

Phone: (616) 975-4500

CAS No.

R2SB-46-C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288691

7440-38-2 Arsenic, Total

6.1

J

MS mg/kg dry

7439-92-1 Lead, Total

38

MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

14:48

Date Received:

09/25/01

Time Received:

08:30

HLH
10/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

R2SB-47-A Data Qualifiers Units
C | Q | M

Lab Sample No: 288692

7440-38-2	Arsenic, Total	6.7	J	MS	mg/kg dry
7439-92-1	Lead, Total	45		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	14:56
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-47-B	Data Qualifiers	Units
MS/MSD	C Q M	

Lab Sample No: 288693

7440-38-2	Arsenic, Total	9.0	J	MS	mg/kg dry
7439-92-1	Lead, Total	24		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:01
Date Received:	09/25/01
Time Received:	08:30

H/L H
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-48-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288694

7440-38-2 Arsenic, Total

6.5

J

MS mg/kg dry

7439-92-1 Lead, Total

41

|

MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

15:09

Date Received:

09/25/01

Time Received:

08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-48-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288695

7440-38-2 Arsenic, Total

6.7

| J

| MS mg/kg dry

7439-92-1 Lead, Total

45

|

| MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

15:14

Date Received:

09/25/01

Time Received:

08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-49-A Data Qualifiers Units
C | Q | M

Lab Sample No: 288696

7440-38-2	Arsenic, Total	8.0	J	MS	mg/kg dry
7439-92-1	Lead, Total	47		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:21
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

Subm: 9/22-24/01 Samples

CAS No.	R2SB-49-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 288697

7440-38-2	Arsenic, Total	9.7	J	MS	mg/kg dry
7439-92-1	Lead, Total	117		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:25
Date Received:	09/25/01
Time Received:	08:30

HLH
11/4/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-50-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

288698

7440-38-2 Arsenic, Total

6.9

| J

| MS mg/kg dry

7439-92-1 Lead, Total

34

|

| MS mg/kg dry

Sampled by:

BMG/SM

Date Sampled:

09/24/01

Time Sampled:

15:33

Date Received:

09/25/01

Time Received:

08:30

HLH
4/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-50-B	Data Qualifiers	Units
		C Q M	

Lab Sample No: 288699

7440-38-2	Arsenic, Total	7.0	J	MS	mg/kg dry
7439-92-1	Lead, Total	36		MS	mg/kg dry

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:38
Date Received:	09/25/01
Time Received:	08:30

HLH
11/6/01



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 9/22-24/01 Samples

Submittal Number: 35132- 31

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB3-092401 Data Qualifiers Units
C | Q | M

Lab Sample No: 288700

7440-38-2	Arsenic, Total	<1.0	J	MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:	BMG/SM
Date Sampled:	09/24/01
Time Sampled:	15:55
Date Received:	09/25/01
Time Received:	08:30

MLH
11/6/01



QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -31
Sample ID. MW-7MS/MSD

Matrix WATER
Lab Sample No. 288680
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Total	70 - 138	52.2	<10	50	104	MS
Antimony, Total	70 - 138	49.2	<10	50	98	MS
Arsenic, Total	59 - 164	83.2	25	50	116	MS
Arsenic, Total	59 - 164	83.9	25	50	118	MS
Barium, Total	53 - 142	74.7	21	50	107	MS
Barium, Total	53 - 142	76.8	21	50	112	MS
Cadmium, Total	74 - 127	53.6	<0.2	50	107	MS
Cadmium, Total	74 - 127	54.8	<0.2	50	110	MS
Lead, Total	75 - 134	72.0	19	50	106	MS
Lead, Total	75 - 134	75.7	19	50	113	MS
Mercury, Total	59 - 158	2.67	<0.2	2.5	107	CV
Mercury, Total	59 - 158	2.58	<0.2	2.5	103	CV
Selenium, Total	59 - 155	69.5	3.7	50	132	MS
Selenium, Total	59 - 155	67.3	3.7	50	127	MS
Silver, Total	69 - 128	18.1	<0.2	50	36	MS
Silver, Total	69 - 128	17.3	<0.2	50	35	MS

HLF
11/6/01
000077

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No.	35132 -31	Matrix	SOIL
Sample ID.	R2SB-47-BMS/MSD	Lab Sample No.	288693
		Units	mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	36.0	9.0	31.2	87	MS
Arsenic, Total	60 - 141	31.0	9.0	31.2	71	MS
Lead, Total	74 - 132	48.6	24	31.2	79	MS
Lead, Total	74 - 132	47.9	24	31.2	77	MS

HLH
11/6/01
000073

Field Duplicates

Criteria	Aqueous	Solid
Both results < 5*EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$
Both results > 5*EQL	$\pm 25\%$	$\pm 40\%$
One result < EQL, one result > EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$

	R2SB-46-B	R2SB-46-C	EQL	5*EQL	2.5*EQL	RPD	
Arsenic	6.5	6.1	1	5	2.5	6.35	Acceptable
Lead	41	38	1	5	2.5	7.59	Acceptable

H/WH
11/6/01

Field Duplicates

Criteria	Aqueous	Solid
Both results < 5*EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$
Both results > 5*EQL	$\pm 25\%$	$\pm 40\%$
One result < EQL, one result > EQL	$\pm 1.5*EQL$	$\pm 2.5*EQL$

	MW-3	MW-3A	EQL	5*EQL	1.5*EQL	RPD/Difference	
Antimony	U	U					
Arsenic	9.7	9.8	1	5	1.5	1.03	Acceptable
Barium	102	101	10	50	15	0.99	Acceptable
Cadmium	U	U					
Chromium	U	U					
Lead	1.3	1.4	1	5	1.5	0.1	Acceptable
Mercury	U	U					
Selenium	U	4.7	2	10	3	NC	
Silver	U	U					

NC - not calculable

HLH
11/6/01

SERIAL DILUTIONS

Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	
Sb	288680	MW-7	U					NC
As	288680	MW-7	24.7	27.00	9.29	0.105	5.25	Acceptable
Se	288680	MW-7	6.95	9.95	43.12	0.191	9.55	
Ag	288680	MW-7	0.07	0.26	273.9	0.012	0.6	
Cd	288680	MW-7	U					NC
Cr	288680	MW-7	U					NC
Ba	288680	MW-7	21.29	22.69	6.59	0.2	10	Acceptable
Pb	288680	MW-7	19.29	19.47	0.93	0.022	1.1	Acceptable

10/9/11
H/LH
H

SERIAL DILUTIONS

Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	
As	288693	R2SB-47-B	9.0	9.02	0.32	0.105	5.25	Acceptable
Pb	288693	R2SB-47-B	23.86	24.42	2.32	0.022	1.1	Acceptable

HLH
11/4/01

RMC - MEMPHIS
Groundwater Sampling, 9/22 - 9/24/2001
Trimatrix# 35132-31 Project# 98-478-00

Page 1 of 2

Sample Location		MW-9			MW-1			MW-2			MW-7			MW-8			MW-3			MW-3A			EB-1-092201		
Lab ID		288677			288678			288679			288680			288681			288682			288683			288684		
Sample Date		09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001			09/22/2001		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Aqueous		
Remarks																				FD of MW-3			Equipment Blank		
Parameter	Units	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	ug/L		U	10		U	10		U	10		U	10	14		10		U	10		U	10		U	10
Arsenic	ug/L	7.7		1	33		1	12		1	25		1	5.1		1	9.7		1	9.8		1		U	1
Barium	ug/L	137		10	101		10	31		10	21		10	133		10	102		10	101		10		U	10
Cadmium	ug/L		U	0.2	0.2		0.2	0.3		0.2		U	0.2	0.8		0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L		U	1	3.1		1		U	1		U	1		U	1		U	1		U	1		U	1
Lead	ug/L	1.6		1	5.9		1	49		1	19		1	21		1	1.3		1	1.4		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2	6.1	J	2		U	2	3.7	J	2		U	2		U	2	4.7	J	2		U	2
Silver	ug/L		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2

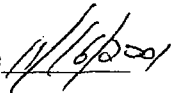
RMC - MEMPHIS

Groundwater Sampling, 9/22 - 9/24/2001

Trimatrix# 35132-31 Project# 98-478-00

Page 2 of 2

Sample Location		MW-5			MW-4			MW-6			EB-1-092401		
Lab ID		288685			288686			288687			288688		
Sample Date		09/24/2001			09/24/2001			09/24/2001			09/24/2001		
Matrix		Groundwater			Groundwater			Groundwater			Aqueous		
Remarks											Equipment Blank		
Parameter	Units	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	ug/L		U	10		U	10		U	10		U	10
Arsenic	ug/L	7.6		1		U	1	1.9		1		U	1
Barium	ug/L	170		10	197		10	92		10		U	10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L		U	1		U	1		U	1		U	1
Lead	ug/L	2		1		U	1		U	1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2		U	2		U	2		U	2
Silver	ug/L		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2

RMC - BEECHGROVE
Soil Sampling, 9/24/2001
Trimatrix# 35132-31 Project# 98-478-04

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-46-A	288689	09/24/2001	Soil		Arsenic	mg/kg	6.9	J	1
R2SB-46-B	288690	09/24/2001	Soil		Arsenic	mg/kg	6.5	J	1
R2SB-46-C	288691	09/24/2001	Soil	FD of R2SB-46-B	Arsenic	mg/kg	6.1	J	1
R2SB-47-A	288692	09/24/2001	Soil		Arsenic	mg/kg	6.7	J	1
R2SB-47-B	288693	09/24/2001	Soil		Arsenic	mg/kg	9	J	1
R2SB-48-A	288694	09/24/2001	Soil		Arsenic	mg/kg	6.5	J	1
R2SB-48-B	288695	09/24/2001	Soil		Arsenic	mg/kg	6.7	J	1
R2SB-49-A	288696	09/24/2001	Soil		Arsenic	mg/kg	8	J	1
R2SB-49-B	288697	09/24/2001	Soil		Arsenic	mg/kg	9.7	J	1
R2SB-50-A	288698	09/24/2001	Soil		Arsenic	mg/kg	6.9	J	1
R2SB-50-B	288699	09/24/2001	Soil		Arsenic	mg/kg	7	J	1
EB-3-092401	288700	09/24/2001	Aqueous	Equipment Blank	Arsenic	ug/L		UJ	1

RMC - BEECHGROVE
Soil Sampling, 9/24/2001
Trimatrix# 35132-31 Project# 98-478-00

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	DL
R2SB-46-A	288689	09/24/2001	Soil		Lead	mg/kg	34		0.6
R2SB-46-B	288690	09/24/2001	Soil		Lead	mg/kg	41		0.6
R2SB-46-C	288691	09/24/2001	Soil	FD of R2SB-46-B	Lead	mg/kg	38		0.6
R2SB-47-A	288692	09/24/2001	Soil		Lead	mg/kg	45		0.6
R2SB-47-B	288693	09/24/2001	Soil		Lead	mg/kg	24		0.6
R2SB-48-A	288694	09/24/2001	Soil		Lead	mg/kg	41		0.6
R2SB-48-B	288695	09/24/2001	Soil		Lead	mg/kg	45		0.6
R2SB-49-A	288696	09/24/2001	Soil		Lead	mg/kg	47		0.6
R2SB-49-B	288697	09/24/2001	Soil		Lead	mg/kg	117		3.2
R2SB-50-A	288698	09/24/2001	Soil		Lead	mg/kg	34		0.6
R2SB-50-B	288699	09/24/2001	Soil		Lead	mg/kg	36		0.6
EB-3-092401	288700	09/24/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1



APPENDIX D
Data Validation Report of Groundwater and Soil Samples Collected
on December 10-14, 2001

DATA VALIDATION REPORT
OF
GROUNDWATER AND SOIL SAMPLES
COLLECTED ON DECEMBER 10 - 14, 2001
FOR
INORGANIC ANALYSES

Sample Delivery Group No. 35132-32/33/34

PREPARED FOR:

Refined Metals Corporation
Beech Grove, Indiana

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

April 24, 2002
Project Number 98-478-00

DATA VALIDATION REPORT INORGANICS

INTRODUCTION

This data validation report addresses the inorganic results from the groundwater, sediment, soil samples collected on December 10-14, 2001, as part of the RMC Beech Grove, Indiana, Pre-Remedial Design (RD) sampling event. The soil and sediment samples were analyzed by Trimatrix in Grand Rapids, Michigan for lead and arsenic by USEPA SW-846 method 6020. Groundwater samples were analyzed for total and dissolved inorganics (antimony, arsenic, barium, cadmium, chromium, lead, selenium, silver) and total mercury by USEPA SW-846 methods 6020 and 7000 series. The data were reported by Trimatrix under sample delivery group (SDG) 35132-32/33/34.

This review has been performed with guidance from the Indiana Department of Environmental Management's *Guidance to the Performance and Presentation of Analytical Chemistry Data* (July 1998) and the U.S. EPA's *National Functional Guideline for Inorganic Data Review* (Feb. 1994). The findings presented in this report are based upon a review of all data supplied by the laboratory.

1. Timeliness

All samples were prepared and analyzed within holding time limits of 6 months (28 days for mercury).

2. Sample Preparation

All sample preparation procedures were in accordance with the method protocols.

3. Calibration

Soil and sediment samples were analyzed for arsenic and lead by ICP-MS. The groundwater samples were analyzed for total and dissolved (antimony, arsenic, barium, cadmium, chromium, lead, selenium, silver) and total mercury by ICP-MS and CVAA. The instruments were standardized according to the analytical method using one blank and a single calibration standard for each element. All calibrations (ICVs) were performed as required and met the criteria for acceptance.

4. Reference Control Samples/Calibration Verification

Reference control samples (CCVs) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. Control limits for the ICP-MS reference sample are 90-

110 percent (80-120 percent for mercury) of the certified value. All recoveries met the acceptance criteria for control samples.

5. Blanks

No target analytes were detected in laboratory or field blanks, with the exception of the following:

Blank ID	Parameter	Conc	Associated Samples
Method Blank 71626	Lead	2.2 mg/kg	R2SB-53-A, R2SB-53-B, R2SB-53-BD, CSB-30A-A, CSB-30A-B, CSB-30A-C, CSB-30A-D, CSB-30A-E, CSB-30A-CD, CSB-10A-E, CSB-32A-D, CSB-32A-E, CSB-10A-A, CSB-10A-B, CSB-10A-D, CSB-32A-A, CSB-32A-B, CSB-32A-C, CSB-10A-CD, CSB-10A-C
EB-6-121301	Lead	2.6 µg/L	R2SB-52-AD, R2SB-53-A, R2SB-53-B, R2SB-53-BD
EB-1-121401	Lead	1.4 µg/L	CSB-35A-A, CSB-35A-B, CSB-35A-C, CSB-35A-D, CSB-35A-E, CSB-35A-F, CSB-35A-G, CSB-35A-H, CSB-35A-I, CSB-35A-J, CSB-35A-HD, CSB-26A-A, CSB-26A-B, CSB-26A-C, CSB-26A-D, CSB-26A-E
EB-2-121401	Lead	2.1 µg/L	CSB-35A-A, CSB-35A-B, CSB-35A-C, CSB-35A-D, CSB-35A-E, CSB-35A-F, CSB-35A-G, CSB-35A-H, CSB-35A-I, CSB-35A-J, CSB-35A-HD, CSB-26A-A, CSB-26A-B, CSB-26A-C, CSB-26A-D, CSB-26A-E

Sample results less than five times the blank concentration were qualified as undetected (U) due to blank contamination.

6. ICP Interference Check Sample

The interference check sample (LCS) is analyzed by ICP-MS to verify interelement and background correction factors. Analysis was performed as required at the beginning and end of each sample analysis run and recoveries were within the specified criteria of 80-120 percent.

7. Duplicate Analysis

The relative percent differences (RPDs) were within the control limit of 20 percent for aqueous samples and 35 percent for solid samples.

8. Field Duplicates

Sample MW-3/MW-3A, R2SED-7/R2SED-7D, R2SB-4A-A/R2SB-4A-AD, R2SB-2A-A/R2SB-2A-AD, R2SB-1A-C/R2SB-1A-CD, R2SB-52-A/R2SB-52-AD, R2SB-53-B/R2SB-53-BD, CSB-35A-H/CSB-35A-HD, CSB-26A-C/CSB-26A-CD, CSB-1A-D/CSB-1A-DD, CSB-28A-C/CSB-28A-CD, CSB-30A-C/CSB-30A-CD, CSB-10A-C/CSB-10A-CD, and CSB-10A-

H/CSB-10A-HD were field duplicates. Results exhibited reasonable agreement, with the exception of the following:

Sample ID	Parameter	Concentration	RPD
R2SB-2A-A R2SB-2A-AD	Arsenic	4.6 mg/kg 7.8 mg/kg	51.61%
R2SB-52-A R2SB-52-AD	Arsenic	4.6 mg/kg 9.3 mg/kg	67.63 %
CSB-35A-H CSB-35A-HD	Lead	1520 mg/kg 413 mg/kg	114.54 %
CSB-35A-H CSB-35A-HD	Antimony	27 mg/kg 11 mg/kg	84.21 %
CSB-35A-H CSB-35A-HD	Cadmium	1.5 mg/kg 0.75 mg/kg	66.67 %
CSB-1A-D CSB-1A-DD	Antimony	2660 mg/kg 1650 mg/kg	46.87 %
CSB-1A-D CSB-1A-DD	Cadmium	1000 mg/kg 346 mg/kg	97.18 %
CSB-28A-C CSB-28A-CD	Lead	27 mg/kg 118 mg/kg	125.52 %
CSB-30A-C CSB-30A-CD	Antimony	7 mg/kg 4.6 mg/kg	41.38 %
CSB-10A-C CSB-10A-CD	Lead	256,000 mg/kg 169,000 mg/kg	40.94 %
CSB-10A-H CSB-10A-HD	Lead	101 mg/kg 42 mg/kg	82.52 %

Sample results were qualified as estimated (J).

9. Matrix Spike Analysis

The matrix spike (MS) percent recoveries were within the QC limits of 75-125 percent (soil/sediment matrices) and 80-120 percent (aqueous matrices), with the exception of the following:

Parameter	%R	MS or MSD	Associated Samples
Dissolved Arsenic	129% 131%	MS MSD	MW-9, MW-1, MW-2, MW-7S, MW-8S, MW-3, MW-3D, MW-5, MW-4, MW-6, EB1-121001, EB2-121101
Dissolved Selenium	133% 131%	MS MSD	

Parameter	%R	MS or MSD	Associated Samples
Total Lead	71%	MSD	R2SED-1C, R2SED-1D, R2SED-5D, R2SED-7C, R2SED-7D, R2SED-3C, R2SED-3D, R2SED-5C, R2SED-7CD, R2SED-9C, R2SED-9D, R2SB-51-A, R2SB-51-B
Total Arsenic	40% 57%	MS MSD	R2SB-4A-A, R2SB-4A-B, R2SB-4A-AD, R2SB-4A-C, R2SB-3A-A, R2SB-3A-C, R2SB-2A-A, R2SB-2A-B, R2SB-2A-C, R2SB-2A-AD, R2SB-1A-A, R2SB-1A-B, R2SB-1A-C, R2SB-1A-CD, R2SB-13A-A, R2SB-13A-B, R2SB-13A-C, R2SB-52-A, R2SB-52-B
Total Antimony	74%	MSD	CSB-1A-D, CSB-1A-E, CSB-1A-DD, CSB-38A-A, CSB-38A-B, CSB-38A-C, CSB-38A-D, CSB-13A-E, CSB-28A-E, CSB-10A-A, CSB-10A-B, CSB-10A-D, CSB-32A-A, CSB-32A-B, CSB-32A-C, CSB-10A-CD
Total Antimony	127%	MS	STRW-1

The associated sample results and reporting limits were qualified as estimated (J/UJ) when the %R was less than the lower QC limit. The associated sample results were qualified as estimated (J) when the %R exceeded the upper QC limit.

10. Laboratory Control Sample (LCS)

The laboratory control sample (LCS) percent recoveries were within the QC limits of 80-120 percent.

11. ICP Serial Dilution

All concentrations were either less than 50 times the instrument detection limit (IDL) or greater than 50 times the IDL with the percent differences that were ± 10 percent of the serial dilution result, with the exception of the following:

Sample ID	Parameter	Initial Conc	Serial Dilution Conc	IDL	%D	Associated Samples
MW-7S	Arsenic	30.106 mg/kg	23.304 mg/kg	0.11	22.59	MW-1, MW-2, MW-3, MW-3D, MW-4, MW-5, MW-6, MW-7S, MW-8S, MW-9, EB-1-121001, EB-2-121101
	Chromium	13.422 mg/kg	8.362 mg/kg	0.14	37.7	
	Selenium	6.451 mg/kg	11.989 mg/kg	0.19	85.84	

Sample ID	Parameter	Initial Conc	Serial Dilution Conc	IDL	%D	Associated Samples
R2SB-3A-C	Arsenic	6.339 mg/kg	8.23 mg/kg	0.1	29.83	R2SB-3A-C, R2SB-2A-A, R2SB-2A-B, R2SB-2A-C, R2SB-2A-AD, R2SB-1A-A, R2SB-1A-B, R2SB-1A-C, R2SB-1A-CD, R2SB-13A-A, R2SB-13A-B, R2SB-13A-C, R2SB-52-A, R2SB-52-B
CSB-38A-D	Lead	11.586 mg/kg	16.303 mg/kg	0.03	40.71	CSB-38A-D

Sample results were qualified as estimated (J).

DATA VALIDATION REPORT VALIDATION SUMMARY

SUMMARY

All the data is useable as qualified.

DATA QUALIFIERS

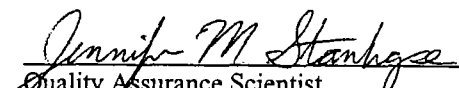
The following qualifiers were used to modify the data quality and usefulness of individual analytical results.

- | | | |
|----|---|---|
| U | - | The analyte was not detected at the given quantitation limit. |
| J | - | The analyte was positively identified and detected; however, the concentration is an estimated value because the result is less than the quantitation limit or quality control criteria were not met. |
| UJ | - | The analyte was not detected; the associated quantitation limit is an estimated value. |
| D | - | The value was obtained from a reanalysis of a diluted sample. |
| E | - | Concentration reported is estimated, the concentration exceeded the instrument's calibration range. The sample should be diluted. |
| R | - | The value reported has been rejected. |

DATA ASSESSMENT

Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory and not directly involved in the project.

This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgement the data are acceptable for use except where qualified with qualifiers which modify the usefulness of those individual values.


Quality Assurance Scientist

4/24/2002
Date


Quality Assurance Manager

4/24/2002
Date

RMC BEECHGROVE

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4th Quarter 2001 Groundwater, 12/10 - 12/11/2001

Trimatrix# 35132-32 Project# 98-478-04

Sample Location		MW-9			MW-1			MW-2			EB-1-121001			MW-7S			MW-8S			MW-3		
Lab ID		295087			295088			295089			295090			295091			295092			295093		
Sample Date		12/10/2001			12/10/2001			12/10/2001			12/10/2001			12/11/2001			12/11/2001			12/11/2001		
Matrix		Groundwater			Groundwater			Groundwater			Aqueous			Groundwater			Groundwater			Groundwater		
Remarks											Equipment Blank											
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																						
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	4		1	27		1	12		1		U	1	26		1	13		1	11		1
Barium	ug/L	68		10	93		10	48		10		U	10	25		10	123		10	98		10
Cadmium	ug/L		U	0.2		U	0.2	0.4		0.2		U	0.2		U	0.2	0.4		0.2		U	0.2
Chromium	ug/L	2.2		1	4		1	4.8		1		U	1	2.8		1		U	1		U	1
Lead	ug/L		U	1	3.4		1	84		1		U	1	47		1	23		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L		U	2	4		2	3.1		2		U	2	5.7		2		U	2	3.7		2
Silver	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Dissolved Metals																						
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	3.7	J	1	22	J	1	9.8	J	1		UJ	1	30	J	1	14	J	1	8.4	J	1
Barium	ug/L	68		10	85		10	25		10		U	10	23		10	135		10	113		10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2	0.3		0.2		U	0.2
Chromium	ug/L	3.8	J	1	8.9	J	1	6.8	J	1		UJ	1	13	J	1	3.8	J	1	6.6	J	1
Lead	ug/L		U	1		U	1	6.2		1		U	1	2.5		1	11		1		U	1
Selenium	ug/L		UJ	2	4.9	J	2	3.7	J	2		UJ	2	6.5	J	2		UJ	2	3.7	J	2

RMC BEECHGROVE
4th Quarter 2001 Groundwater, 12/10 - 12/11/2001
Trimatrix# 35132-32 Project# 98-478-04

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Sample Location		MW-3D			MW-5			MW-4			MW-6			EB-2-121101		
Lab ID		295094			295095			295096			295097			295098		
Sample Date		12/11/2001			12/11/2001			12/11/2001			12/11/2001			12/11/2001		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Aqueous		
Remarks		FD of MW-3												Equipment Blank		
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
Total Metals																
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	11		1	5.4		1		U	1	2.2		1		U	1
Barium	ug/L	102		10	150		10	187		10	79		10		U	10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L		U	1		U	1		U	1		U	1		U	1
Lead	ug/L		U	1	2.1		1	1.5		1	1.3		1		U	1
Mercury	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	ug/L	2.7		2		U	2		U	2		U	2		U	2
Silver	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Dissolved Metals																
Antimony	ug/L		U	10		U	10		U	10		U	10		U	10
Arsenic	ug/L	8.8	J	1	3.7	J	1		UJ	1	1.4	J	1		UJ	1
Barium	ug/L	123		10	170		10	203		10	89		10		U	10
Cadmium	ug/L		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	ug/L	7.1	J	1	4	J	1	3.4	J	1	3.8	J	1		UJ	1
Lead	ug/L		U	1		U	1		U	1		U	1		U	1
Selenium	ug/L	4.5	J	2		UJ	2		UJ	2		UJ	2		UJ	2

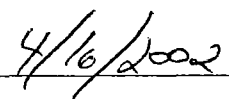
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4/16/2002

RMC BEECHGROVE
Sediment Sampling, 12/12/2001
Trimatrix# 35132-32 Project# 98-478-04

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	RL
R2SED-1C	295099	12/12/2001	Sediment		Arsenic	mg/kg	10		1
R2SED-1D	295100	12/12/2001	Sediment		Arsenic	mg/kg	5.5		1
R2SED-3C	295101	12/12/2001	Sediment		Arsenic	mg/kg	13		1
R2SED-3D	295102	12/12/2001	Sediment		Arsenic	mg/kg	12		1
R2SED-5C	295103	12/12/2001	Sediment		Arsenic	mg/kg	5.7		1
R2SED-5D	295104	12/12/2001	Sediment		Arsenic	mg/kg	7.3		1
EB-3-121201	295105	12/12/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SED-7C	295106	12/12/2001	Sediment		Arsenic	mg/kg	13		1
R2SED-7D	295107	12/12/2001	Sediment		Arsenic	mg/kg	9.2		1
R2SED-7CD	295108	12/12/2001	Sediment	FD of R2SED-7C	Arsenic	mg/kg	10		1
R2SED-9C	295109	12/12/2001	Sediment		Arsenic	mg/kg	8.9		1
R2SED-9D	295110	12/12/2001	Sediment		Arsenic	mg/kg	8.2		1
R2SB-51-A	295111	12/12/2001	Sediment		Arsenic	mg/kg	6.6		1
R2SB-51-B	295112	12/12/2001	Sediment		Arsenic	mg/kg	7		1
R2SED-1C	295099	12/12/2001	Sediment		Lead	mg/kg	19	J	0.6
R2SED-1D	295100	12/12/2001	Sediment		Lead	mg/kg	62	J	0.6
R2SED-3C	295101	12/12/2001	Sediment		Lead	mg/kg	622	J	13
R2SED-3D	295102	12/12/2001	Sediment		Lead	mg/kg	691	J	13
R2SED-5C	295103	12/12/2001	Sediment		Lead	mg/kg	73	J	1.3
R2SED-5D	295104	12/12/2001	Sediment		Lead	mg/kg	20	J	0.6
EB-3-121201	295105	12/12/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SED-7C	295106	12/12/2001	Sediment		Lead	mg/kg	61	J	0.6
R2SED-7D	295107	12/12/2001	Sediment		Lead	mg/kg	27	J	0.6
R2SED-7CD	295108	12/12/2001	Sediment	FD of R2SED-7C	Lead	mg/kg	57	J	0.6
R2SED-9C	295109	12/12/2001	Sediment		Lead	mg/kg	25	J	0.6
R2SED-9D	295110	12/12/2001	Sediment		Lead	mg/kg	39	J	0.6
R2SB-51-A	295111	12/12/2001	Sediment		Lead	mg/kg	285	J	6.3
R2SB-51-B	295112	12/12/2001	Sediment		Lead	mg/kg	199	J	6.3





RMC BEECHGROVE
Sediment Sampling, 12/13/2001
Trimatrix# 351132-33 Project# 98-478-04

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	RL
R2SB-4A-A	295447	12/13/2001	Sediment		Arsenic	mg/kg	28	J	1
EB-1-121301	295448	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SB-4A-B	295449	12/13/2001	Sediment		Arsenic	mg/kg	13	J	1
R2SB-4A-AD	295450	12/13/2001	Sediment	FD of R2SB-4A-A	Arsenic	mg/kg	26	J	1
R2SB-4A-C	295451	12/13/2001	Sediment		Arsenic	mg/kg	18	J	1
R2SB-3A-A	295452	12/13/2001	Sediment		Arsenic	mg/kg	36	J	1
R2SB-3A-B	295453	12/13/2001	Sediment		Arsenic	mg/kg	19		3.1
R2SB-3A-C	295454	12/13/2001	Sediment		Arsenic	mg/kg	6.3	J	1
EB-2-121301	295455	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SB-2A-A	295456	12/13/2001	Sediment		Arsenic	mg/kg	16	J	1
R2SB-2A-B	295457	12/13/2001	Sediment		Arsenic	mg/kg	15	J	1
R2SB-2A-C	295458	12/13/2001	Sediment		Arsenic	mg/kg	4.6	J	1
R2SB-2A-AD	295459	12/13/2001	Sediment	FD of R2SB-2A-A	Arsenic	mg/kg	7.8	J	1
EB-3-121301	295460	12/13/2001	Sediment		Arsenic	ug/L		U	1
R2SB-1A-A	295461	12/13/2001	Sediment		Arsenic	mg/kg	58	J	1
R2SB-1A-B	295462	12/13/2001	Sediment		Arsenic	mg/kg	7.6	J	1
R2SB-1A-C	295463	12/13/2001	Sediment		Arsenic	mg/kg	7.8	J	1
R2SB-1A-CD	295464	12/13/2001	Sediment	FD of R2SB-1A-C	Arsenic	mg/kg	8.3	J	1
R2SB-13A-A	295465	12/13/2001	Sediment		Arsenic	mg/kg	14	J	1
R2SB-13A-B	295466	12/13/2001	Sediment		Arsenic	mg/kg	2.1	J	1
R2SB-13A-C	295467	12/13/2001	Sediment		Arsenic	mg/kg	4.5	J	1
R2SB-52-A	295468	12/13/2001	Sediment		Arsenic	mg/kg	4.6	J	1
R2SB-52-B	295469	12/13/2001	Sediment		Arsenic	mg/kg	3.3	J	1
EB-5-121301	295470	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1
R2SB-52-AD	295471	12/13/2001	Sediment	FD of R2SB-52-A	Arsenic	mg/kg	9.3	J	1
R2SB-53-A	295472	12/13/2001	Sediment		Arsenic	mg/kg	8.4	J	1
R2SB-53-B	295473	12/13/2001	Sediment		Arsenic	mg/kg	3.3	J	1
R2SB-53-BD	295474	12/13/2001	Sediment	FD of R2SB-53-B	Arsenic	mg/kg	3	J	1
EB-6-121301	295475	12/13/2001	Aqueous	Equipment Blank	Arsenic	ug/L		U	1

4/16/2002

RMC BEECHGROVE
Sediment Sampling, 12/13/2001
Trimatrix# 351132-33 Project# 98-478-04

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Parameter	Units	Result	Q	RL
R2SB-4A-A	295447	12/13/2001	Sediment		Lead	mg/kg	2,490		63
EB-1-121301	295448	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SB-4A-B	295449	12/13/2001	Sediment		Lead	mg/kg	874		13
R2SB-4A-AD	295450	12/13/2001	Sediment	FD of R2SB-4A-A	Lead	mg/kg	2,320		63
R2SB-4A-C	295451	12/13/2001	Sediment		Lead	mg/kg	1,420		32
R2SB-3A-A	295452	12/13/2001	Sediment		Lead	mg/kg	1,620		32
R2SB-3A-B	295453	12/13/2001	Sediment		Lead	mg/kg	1,410		32
R2SB-3A-C	295454	12/13/2001	Sediment		Lead	mg/kg	1,330		32
EB-2-121301	295455	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SB-2A-A	295456	12/13/2001	Sediment		Lead	mg/kg	918		13
R2SB-2A-B	295457	12/13/2001	Sediment		Lead	mg/kg	4,120		63
R2SB-2A-C	295458	12/13/2001	Sediment		Lead	mg/kg	816		6.3
R2SB-2A-AD	295459	12/13/2001	Sediment	FD of R2SB-2A-A	Lead	mg/kg	996		13
EB-3-121301	295460	12/13/2001	Sediment		Lead	ug/L		U	1
R2SB-1A-A	295461	12/13/2001	Sediment		Lead	mg/kg	2,250		32
R2SB-1A-B	295462	12/13/2001	Sediment		Lead	mg/kg	609		6.3
R2SB-1A-C	295463	12/13/2001	Sediment		Lead	mg/kg	4,230		32
R2SB-1A-CD	295464	12/13/2001	Sediment	FD of R2SB-1A-C	Lead	mg/kg	5,010		63
R2SB-13A-A	295465	12/13/2001	Sediment		Lead	mg/kg	2,910		32
R2SB-13A-B	295466	12/13/2001	Sediment		Lead	mg/kg	24		0.6
R2SB-13A-C	295467	12/13/2001	Sediment		Lead	mg/kg	11		0.6
R2SB-52-A	295468	12/13/2001	Sediment		Lead	mg/kg	300		3.2
R2SB-52-B	295469	12/13/2001	Sediment		Lead	mg/kg	5.7		0.6
EB-5-121301	295470	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L		U	1
R2SB-52-AD	295471	12/13/2001	Sediment	FD of R2SB-52-A	Lead	mg/kg	338		6.3
R2SB-53-A	295472	12/13/2001	Sediment		Lead	mg/kg	499		6.3
R2SB-53-B	295473	12/13/2001	Sediment		Lead	mg/kg	58		0.6
R2SB-53-BD	295474	12/13/2001	Sediment	FD of R2SB-53-B	Lead	mg/kg	52		0.6
EB-6-121301	295475	12/13/2001	Aqueous	Equipment Blank	Lead	ug/L	2.6		1

[Signature]

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RMC BEECHGROVE
Soil Sampling, 12/14/2001
Trimatrix# 351132-33 Project# 98-478-04

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Units	Arsenic			Lead			Antimony			Cadmium		
						Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
EB-1-121401	295476	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1	1.4		1		U	10		U	0.2
EB-2-121401	295477	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1	2.1		1		U	10		U	0.2
CSB-35A-A	295478	12/14/2001	Soil		mg/kg	154		6.3	70,400		1,250	1,280		25	83		3.2
CSB-35A-B	295479	12/14/2001	Soil		mg/kg	6.1		1	279		6.3	5.3		1	0.66		0.5
CSB-35A-C	295480	12/14/2001	Soil		mg/kg	408		13	350,000		6,250	3,150		100	144		13
CSB-35A-D	295481	12/14/2001	Soil		mg/kg	6		1	285		6.3	4.9		1	0.62		0.5
CSB-35A-E	295482	12/14/2001	Soil		mg/kg	6.3		1	499		13	3.9		1	0.99		0.5
CSB-35A-F	295483	12/14/2001	Soil		mg/kg	6.3		1	69		1.3	1.7		1		U	0.5
CSB-35A-G	295484	12/14/2001	Soil		mg/kg	6.6		1	156		3.2	6.3		1	0.89		0.5
CSB-35A-H	295485	12/14/2001	Soil		mg/kg	8.1		1	1,520	J	32	27	J	1	1.5	J	0.5
CSB-35A-I	295486	12/14/2001	Soil		mg/kg	5.9		1	11		0.6		U	1		U	0.5
CSB-35A-J	295487	12/14/2001	Soil		mg/kg	4.1		1	11		0.6		U	1		U	0.5
CSB-35A-HD	295488	12/14/2001	Soil	FD of CSB-35A-H	mg/kg	6.5		1	413	J	13	11	J	1	0.75	J	0.5
CSB-26A-A	295489	12/14/2001	Soil		mg/kg	12		1	174		3.2	6.4		1	46		0.5
CSB-26A-B	295490	12/14/2001	Soil		mg/kg	11		1	88		1.3	1.7		1	40		0.5
CSB-26A-C	295491	12/14/2001	Soil		mg/kg	6.4		1	40		0.6	1		1		U	0.5
CSB-26A-D	295492	12/14/2001	Soil		mg/kg	6.2		1	25		0.6		U	1	0.54		0.5
CSB-26A-E	295493	12/14/2001	Soil		mg/kg	5.8		1	23		0.6		U	1		U	0.5
EB-4-121401	295494	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-26A-CD	295495	12/14/2001	Soil	FD of CSB-26A-C	mg/kg	5.5		1	30		0.6	1.5		1	0.53		0.5
CSB-1A-A	295496	12/14/2001	Soil		mg/kg	3.2		1	903		32	3.4		1		U	0.5
CSB-1A-B	295497	12/14/2001	Soil		mg/kg	1.5		1	18		0.6		U	1		U	0.5
CSB-1A-C	295498	12/14/2001	Soil		mg/kg	1.5		1	44		0.6		U	1		U	0.5
CSB-1A-D	295499	12/14/2001	Soil		mg/kg	989		13	249,000		6,250	2,660	J	100	1,000	J	13
CSB-1A-E	295500	12/14/2001	Soil		mg/kg	6.8		1	847		13	16	J	1	1.7		0.5
EB-5-121401	295501	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-1A-DD	295502	12/14/2001	Soil	FD of CSB-1A-D	mg/kg	821		13	185,000		6,250	1,650	J	50	346	J	13
CSB-38A-A	295503	12/14/2001	Soil		mg/kg	67		6.3	6,200		125	156	J	2.5	110		6.3
CSB-38A-B	295504	12/14/2001	Soil		mg/kg	7.9		1	14		0.6		UJ	1		U	0.5
CSB-38A-C	295505	12/14/2001	Soil		mg/kg	9.3		1	22		0.6		UJ	1		U	0.5
CSB-38A-D	295506	12/14/2001	Soil		mg/kg	2.5		1	12		0.6		UJ	1		U	0.5
CSB-38A-E	295507	12/14/2001	Soil		mg/kg	8.6		1	319		6.3	6.2		1	6.8		0.5

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RMC BEECHGROVE
Soil Sampling, 12/14/2001
Trimatrix# 351132-33 Project# 98-478-04

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Sample Location	Lab ID	Sample Date	Matrix	Remarks	Units	Arsenic			Lead			Antimony			Cadmium		
						Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
CSB-13A-A	295508	12/14/2001	Soil		mg/kg	11		1	2,300		63	80		5	64		1.3
CSB-13A-B	295509	12/14/2001	Soil		mg/kg	22		1	1,070		13	197		5	29		0.5
CSB-13A-C	295510	12/14/2001	Soil		mg/kg	6.6		1	75		1.3	5		1	36		0.5
CSB-13A-D	295511	12/14/2001	Soil		mg/kg	5.9		1	39		0.6	1.9		1	1.7		0.5
CSB-13A-E	295512	12/14/2001	Soil		mg/kg	6		1	27		0.6	2.9	J	1	0.99		0.5
EB-7-121401	295513	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-28A-A	295514	12/14/2001	Soil		mg/kg	53		1	30		0.6	5		1	17		0.5
CSB-28A-B	295515	12/14/2001	Soil		mg/kg	5.1		1	13		0.6		U	1		U	0.5
CSB-28A-C	295516	12/14/2001	Soil		mg/kg	7.9		1	27	J	0.6		U	1		U	0.5
CSB-28A-D	295517	12/14/2001	Soil		mg/kg	6.5		1	14		0.6		U	1		U	0.5
CSB-28A-E	295518	12/14/2001	Soil		mg/kg	9.4		1	16		0.6		U	1		U	0.5
CSB-28A-CD	295519	12/14/2001	Soil	FD of CSB-28A-C	mg/kg	9.1		1	118	J	6.3	3		1		U	0.5
CSB-30A-A	295520	12/14/2001	Soil		mg/kg	30	J	1	2,360		63	63		2.5	4.2		0.5
CSB-30A-B	295521	12/14/2001	Soil		mg/kg	13	J	1	366		6.3	14		1	1.3		0.5
EB-8-121401	295522	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-30A-C	295523	12/14/2001	Soil		mg/kg	9.1	J	1	243		6.3	7	J	1	0.83		0.5
CSB-30A-D	295524	12/14/2001	Soil		mg/kg	6.6	J	1	32		0.6	1.2		1		U	0.5
CSB-30A-E	295525	12/14/2001	Soil		mg/kg	6.6	J	1	13	U	0.6		U	1		U	0.5
CSB-10A-A	295526	12/14/2001	Soil		mg/kg	4.5		1	1,780		63	5.7	J	1	0.59		0.5
CSB-10A-B	295527	12/14/2001	Soil		mg/kg	6.1		1	1,210		32	31	J	1	1.3		0.5
CSB-10A-C	295528	12/14/2001	Soil		mg/kg	433		6.25	256,000	J	6,250	1,720		50	132		0.625
EB-9-121401	295529	12/14/2001	Aqueous	Equipment Blank	ug/L		U	1		U	1		U	10		U	0.2
CSB-30A-CD	295530	12/14/2001	Soil	FD of CSB-30A-C	mg/kg	9.5	J	1	228		3.2	4.6	J	1	0.71		0.5
CSB-10A-D	295531	12/14/2001	Soil		mg/kg	2,730		63	475,000		12,500	4,260	J	100	527		6.3
CSB-10A-E	295532	12/14/2001	Soil		mg/kg	7.1	J	1	253		6.3	6.7		1	0.61		0.5
CSB-32A-A	295533	12/14/2001	Soil		mg/kg	394		6.3	164,000		6,250	2,190	J	100	158		6.3
CSB-32A-B	295534	12/14/2001	Soil		mg/kg	199		3.2	90,100		3,130	1,060	J	50	47		3.2
CSB-32A-C	295535	12/14/2001	Soil		mg/kg	230		3.2	64,000		6,250	1,010	J	25	38		3.2
CSB-32A-D	295536	12/14/2001	Soil		mg/kg	8	J	1	40		0.6	2.7		1		U	0.5
CSB-32A-E	295537	12/14/2001	Soil		mg/kg	6.5	J	1	20	U	0.6	1.5		1		U	0.5
CSB-10A-CD	295538	12/14/2001	Soil	FD of CSB-10A-C	mg/kg	313		6.3	169,000	J	6,250	1,520	J	50	112		6.3
STRW-1-121401	295539	12/14/2001	SW		ug/L	4.7	J	1	811		25	46	J	10	11		0.2

[Signature]

4/16/2022

RMC - BEECHGROVE
Soil Sampling, 12/14/2002
Trimatrix# 35132-34 Project# 98-478-05

Sample Location	Lab ID	Sample Date	Matrix	Remarks	Units	Antimony			Arsenic			Cadmium			Lead		
						Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL
CSB-1A-F	297370	12/14/2001	Soil		mg/kg	1.7		1	8.5		1	2		0.5	170		2.5
CSB-1A-G	297371	12/14/2001	Soil		mg/kg	1.6		1	5.6		1		U	0.5	65		1
CSB-1A-H	297372	12/14/2001	Soil		mg/kg	2		1	6		1		U	0.5	82		1
CSB-1A-I	297373	12/14/2001	Soil		mg/kg	1.4		1	5.7		1		U	0.5	47		0.6
CSB-1A-J	297374	12/14/2001	Soil		mg/kg	3.6		1	5.7		1		U	0.5	144		2.5
CSB-10A-F	297375	12/14/2001	Soil		mg/kg	2,960		50	1,700		50	363		5	288,000		5,000
CSB-10A-G	297376	12/14/2001	Soil		mg/kg	12		1	28		1	7.2		0.5	1090		25
CSB-10A-H	297377	12/14/2001	Soil		mg/kg	1.8		1	11		1	5.1		0.5	101	J	2.5
CSB-10A-HD	297378	12/14/2001	Soil	FD of CSB-10A-H	mg/kg	1.6		1	14		1	4.7		0.5	42	J	0.6
CSB-10A-I	297379	12/14/2001	Soil		mg/kg	6.1		1	44		1	20		0.5	365		5

INORGANIC DATA VALIDATION SUMMARY

Site Name: RMC Beech Grove
 Project Number: 98-478-05
 Sampling Date(s): 12/10-14/2001

Laboratory: Trimatrix
 Case /Order No.: 35132-32+33

Compound List: ☐ TAL ☐ Priority Pollutant ☐ Appendix IX ☒ Other various
 Method: ☐ CLP SOW ILM04. ☐ 40 CFR 136 ☒ SW-846 Method 6010/7000 series
☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Initial Calibrations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Continuing Calibrations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CRDL Standards	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Blank Analysis Results	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample Conc < 10x Prep Blank Conc.
ICP Interference Check Sample Recoveries	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Duplicate Results	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<i>gms</i>
Field Duplicate Results (see below)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	MW-3 R2SED-7 R2SB-4A-A MW-3D R2SED-7D R2SB-4A-A
Spike Analysis Recoveries	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample Conc < 4x spike added
Serial Dilution Results	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	%D > 10% and Conc > 50xIDL
Laboratory Control Sample Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Furnace AA QC Analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Quantitation/Detection Limits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Overall Assessment of Data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

General Comments: Field Duplicates continued:
R2SB-2A-A R2SB-1A-C R2SB-52-A R2SB-53-B CSB-35A-W
R2SB-2A-AD R2SB-1A-CD R2SB-52-AD R2SB-53BD CSB-35A-HD
CSB-26A-C CSB-1A-D CSB-28A-C CSB-30A-C CSB-10A-C
CSB-26A-CD CSB-1A-DD CSB-28A-CD CSB-30A-CD CSB-10A-CD

Accept - No qualification required.
 FYI - For your information only, no qualification necessary.
 Qualify - Qualify as rejected, estimated or biased
 NA - Not applicable.
 NR - Not reviewed.

QA Scientist Jennifer M. Stawhage
 Date 3/28/2002

Blank Contamination

Blank ID	Parameter	Conc	Units	Associated Samples	% Solids	Weight	Volume	DF	BC	BC * 5 or *10	Sample Conc	Q
Method Blank 71626	Lead	2.2	mg/kg	R2SB-53-A						22	499	
				R2SB-53-B						22	58	
				R2SB-53-BD						22	52	
				CSB-30A-A						22	2360	
				CSB-30A-B						22	366	
				CSB-30A-C						22	243	
				CSB-30A-D						22	32	
				CSB-30A-E						22	13	
				CSB-30A-CD						22	228	
				CSB-10A-E						22	253	
				CSB-32A-D						22	40	
				CSB-32A-E						22	20	
				CSB-10A-A						22	1780	
				CSB-10A-B						22	1210	
				CSB-10A-D						22	475000	
				CSB-32A-A						22	164000	
				CSB-32A-B						22	90100	
				CSB-32A-C						22	64000	
				CSB-10A-CD						22	169000	
				CSB-10A-C						22	256000	
EB-6-121301	Lead	2.6	µg/L	R2SB-52-AD	1	0.4005	0.05	50	16.2	81	338	
				R2SB-53-A	1	0.3995	0.05	50	16.3	81	499	
				R2SB-53-B	1	0.4005	0.05	5	1.6	8	58	
				R2SB-53-BD	1	0.4003	0.05	5	1.6	8	52	
EB-1-121401	Lead	1.4	µg/L	CSB-35A-A	1	0.9997	0.1	10000	1400.4	7002	70,400	
				CSB-35A-B	1	0.9997	0.1	50	7.0	35	279	
				CSB-35A-C	1	0.9997	0.1	50000	7002.1	35011	350,000	
				CSB-35A-D	1	1.0001	0.1	50	7.0	35	285	
				CSB-35A-E	1	0.9998	0.1	100	14.0	70	499	
				CSB-35A-F	1	1.0005	0.1	10	1.4	7	69	
				CSB-35A-G	1	1.0005	0.1	25	3.5	17	156	
				CSB-35A-H	1	1.0005	0.1	250	35.0	175	1,520	
				CSB-35A-I	1	0.9998	0.1	5	0.7	4	11	
				CSB-35A-J	1	1.0003	0.1	5	0.7	3	11	
				CSB-35A-HD	1	0.9995	0.1	100	14.0	70	413	
				CSB-26A-A	1	1.0005	0.1	25	3.5	17	174	
				CSB-26A-B	1	1.0005	0.1	10	1.4	7	88	
				CSB-26A-C	1	1.0005	0.1	5	0.7	3	40	
				CSB-26A-D	1	1.0005	0.1	5	0.7	3	25	
				CSB-26A-E	1	1	0.1	5	0.7	4	23	
EB-2-121401	Lead	2.1	µg/L	CSB-35A-A	1	0.9997	0.1	10000	2100.6	10503	70,400	
				CSB-35A-B	1	0.9997	0.1	50	10.5	53	279	
				CSB-35A-C	1	0.9997	0.1	50000	10503.2	52516	350,000	
				CSB-35A-D	1	1.0001	0.1	50	10.5	52	285	
				CSB-35A-E	1	0.9998	0.1	100	21.0	105	499	
				CSB-35A-F	1	1.0005	0.1	10	2.1	10	69	
				CSB-35A-G	1	1.0005	0.1	25	5.2	26	156	
				CSB-35A-H	1	1.0005	0.1	250	52.5	262	1,520	
				CSB-35A-I	1	0.9998	0.1	5	1.1	5	11	
				CSB-35A-J	1	1.0003	0.1	5	1.0	5	11	
				CSB-35A-HD	1	0.9995	0.1	100	21.0	105	413	
				CSB-26A-A	1	1.0005	0.1	25	5.2	26	174	
				CSB-26A-B	1	1.0005	0.1	10	2.1	10	88	
				CSB-26A-C	1	1.0005	0.1	5	1.0	5	40	
				CSB-26A-D	1	1.0005	0.1	5	1.0	5	25	
				CSB-26A-E	1	1	0.1	5	1.1	5	23	

* - Sample concentration less than 5 or 10 times blank concentration, qualified as "U" Undetected.

AvD
4/4/2002

QUALITY CONTROL REPORT
 BLANKS
 USEPA CLP FORM 3

SDG No.	35132 -33	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
71626	Method Preparation	1	2.2
71647	Method Preparation	1	<0.60

Associated Samples

R2SB-53-A
 R2SB-53-B
 R2SB-53-BD
 CSB-30A-A
 CSB-30A-B
 CSB-30A-C
 CSB-30A-D
 CSB-30A-E
 CSB-30A-CD

CSB-10A-E CSB-10A-C
 CSB-32A-D
 CSB-32A-E
 CSB-10A-A
 CSB-10A-B
 CSB-10A-D
 CSB-32A-A
 CSB-32A-B
 CSB-32A-C
 CSB-10A-CD

JMS
3/28/2002

000275

**QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A**

SDG No. 35132 -32
Sample ID. MW-7SMS/MSD

Matrix WATER
Lab Sample No. 295091
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Dissolved	70 - 138	287.2	<10	250	115	MS
Antimony, Dissolved	70 - 138	296.6	<10	250	119	MS
Antimony, Total	70 - 138	58.3	<10	50	117	MS
Antimony, Total	70 - 138	57.7	<10	50	115	MS
Arsenic, Dissolved	59 - 164	353.4	30	250	129	MS *
Arsenic, Dissolved	59 - 164	357.4	30	250	131	MS *
Arsenic, Total	59 - 164	76.6	26	50	101	MS
Arsenic, Total	59 - 164	75.5	26	50	99	MS
Barium, Dissolved	53 - 142	279.2	23	250	102	MS
Barium, Dissolved	53 - 142	276.4	23	250	101	MS
Barium, Total	53 - 142	70.0	25	50	90	MS
Barium, Total	53 - 142	70.4	25	50	91	MS
Cadmium, Dissolved	74 - 127	265.5	<0.2	250	106	MS
Cadmium, Dissolved	74 - 127	263.3	<0.2	250	105	MS
Cadmium, Total	74 - 127	48.6	<0.2	50	97	MS
Cadmium, Total	74 - 127	48.0	<0.2	50	96	MS
Chromium, Dissolved	76 - 127	283.4	13	250	108	MS
Chromium, Dissolved	76 - 127	276.8	13	250	106	MS
Chromium, Total	76 - 127	49.3	2.8	50	93	MS
Chromium, Total	76 - 127	49.3	2.8	50	93	MS
Lead, Dissolved	75 - 134	256.6	2.5	250	102	MS
Lead, Dissolved	75 - 134	255.3	2.5	250	101	MS
Lead, Total	75 - 134	95.3	47	50	97	MS
Lead, Total	75 - 134	95.4	47	50	97	MS
Mercury, Total	59 - 158	2.74	<0.2	2.5	110	CV
Mercury, Total	59 - 158	2.43	<0.2	2.5	97	CV
Selenium, Dissolved	59 - 155	338.5	6.5	250	133	MS *
Selenium, Dissolved	59 - 155	334.6	6.5	250	131	MS *
Selenium, Total	59 - 155	56.1	5.7	50	101	MS
Selenium, Total	59 - 155	55.1	5.7	50	99	MS
Silver, Total	69 - 128	43.8	<0.2	50	88	MS
Silver, Total	69 - 128	43.8	<0.2	50	88	MS

* Associated Samples

MW-9 MW-3
MW-1 MW-3D
MW-2 MW-5
EB1-121001 MW-4
MW-7S MW-6
MW-8S EB2-121101

gms
3/28/2002

000286

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -32
Sample ID. R2SED-9DMS/MSD

Matrix SOIL
Lab Sample No. 295110
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	36.9	8.2	31.2	92	MS
Arsenic, Total	60 - 141	35.9	8.2	31.2	89	MS
Lead, Total	74 - 132	64.7	39	31.2	82	MS
Lead, Total	74 - 132	61.1	39	31.2	71	MS

R2SED-1C	R2SED-5C
R2SED-1D	R2SED-7CD
R2SED-5D	R2SED-9C
R2SED-7C	R2SED-9D
R2SED-7D	R2SB-51-A
R2SED-3C	R2SB-51-B
R2SED-3D	

ms
3/28/2002

000288

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -33

Matrix

SOIL

Sample ID. R2SB-3A-CMS/MSD

Lab Sample No.

295454

Units

mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	18.8	6.3	31.2	40	MS
Arsenic, Total	60 - 141	24.2	6.3	31.2	57	MS

R2SB-4A-A	R2SB-1A-A
R2SB-4A-B	R2SB-1A-B
R2SB-4A-AD	R2SB-1A-C
R2SB-4A-C	R2SB-1A-CD
R2SB-3A-A	R2SB-13A-A
R2SB-3A-C	R2SB-13A-B
R2SB-2A-A	R2SB-13A-C
R2SB-2A-B	R2SB-52-A
R2SB-2A-C	R2SB-52-B
R2SB-2A-AD	

ms
3/28/2002

000289

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No.	35132 -33	Matrix	SOIL
Sample ID.	R2SB-53-AMS/MSD	Lab Sample No.	295472
		Units	mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	60 - 141	30.4	8.4	31.2	71	MS
Arsenic, Total	60 - 141	29.1	8.4	31.2	66	MS

R2SB-53-A	CSB-30A-C
R2SB-53-B	CSB-10A-E
R2SB-53-BD	CSB-32A-D
CSB-30A-A	CSB-32A-E
CSB-30A-B	
CSB-30A-C	
CSB-30A-D	
CSB-30A-E	

Jms
3/28/02

000290

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -33
Sample ID. CSB-38A-DMS/MSD

Matrix SOIL
Lab Sample No. 295506
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Total	68 - 126	19.3	<1.0	25	77	MS
Antimony, Total	68 - 126	18.4	<1.0	25	74	MS
Arsenic, Total	60 - 141	33.7	2.5	31.2	100	MS
Arsenic, Total	60 - 141	27.4	2.5	31.2	80	MS
Cadmium, Total	65 - 134	30.0	<0.50	31.2	96	MS
Cadmium, Total	65 - 134	29.1	<0.50	31.2	93	MS
Lead, Total	74 - 132	46.2	12	31.2	110	MS
Lead, Total	74 - 132	50.3	12	31.2	123	MS

CSB-1A-D	CSB-28A-E
CSB-1A-E	CSB-10A-A
CSB-1A-DD	CSB-10A-B
CSB-38A-A	CSB-10A-D
CSB-38A-B	CSB-32A-A
CSB-38A-C	CSB-32A-B
CSB-38A-D	CSB-32A-C
CSB-13A-E	CSB-10A-CD

JMS
3/28/2002

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -33

Matrix WATER

Sample ID. STRW-1121401

Lab Sample No. 295539

Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Antimony, Total	70 - 138	109.3	46	50	127	MS
Antimony, Total	70 - 138	91.7	46	50	91	MS
Arsenic, Total	59 - 164	54.3	4.7	50	99	MS
Arsenic, Total	59 - 164	54.6	4.7	50	100	MS
Cadmium, Total	74 - 127	60.2	11	50	98	MS
Cadmium, Total	74 - 127	58.5	11	50	95	MS

STRW-1

gms
3/28/2002
000294

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No.	35132 -33	Matrix	SOIL
Sample ID.	R2SB-3A-CMS/MSD	Lab Sample No.	295454
		Units	mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD M
Arsenic, Total	0 - 20	18.8	24.2	(25) MS OK <35

R2SB-4A-A	R2SB-2A-AD
R2SB-4A-B	R2SB-1A-A
R2SB-4A-AD	R2SB-1A-B
R2SB-4A-C	R2SB-1A-C
R2SB-3A-A	R2SB-1A-CD
R2SB-3A-C	R2SB-13A-A
R2SB-2A-A	R2SB-13A-B
R2SB-2A-B	R2SB-13A-C
R2SB-2A-C	R2SB-52-A
	R2SB-52-B

gms
3/28/2002

000298

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -33
Sample ID. CSB-38A-DMS/MSD

Matrix
Lab Sample No. 295506
Units mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD M
Antimony, Total	0 - 20	19.3	18.4	5 MS
Arsenic, Total	0 - 20	27.4	33.7	21 MS OK < 35
Cadmium, Total	0 - 20	30.0	29.1	3 MS
Lead, Total	0 - 20	50.3	46.2	8 MS

CSB-1A-D	CSB-28A-E
CSB-1A-E	CSB-10A-A
CSB-1A-DD	CSB-10A-B
CSB-38A-A	CSB-10A-D
CSB-38A-B	CSB-32A-A
CSB-38A-C	CSB-32A-B
CSB-38A-D	CSB-32A-C
CSB-13A-E	CSB-10A-CD

Jms
3/28/2002

000301

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -33
Sample ID. CSB-32A-DMS/MSD

Matrix
Lab Sample No. 295536
Units mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD M
Antimony, Total	0 - 20	25.6	24.6	4 MS
Arsenic, Total	0 - 20	32.9	37.0	12 MS
Cadmium, Total	0 - 20	25.6	31.9	22 MS OK < 35
Lead, Total	0 - 20	65.0	66.8	3 MS

CSB-30A-A CSB-32A-D
CSB-30A-B CSB-32A-E
CSB-30A-C
CSB-30A-D
CSB-30A-E
CSB-30A-CD
CSB-10A-E

md
3/28/2002

000302

Site Name: RMC Beech Grove
Project Number: 98-478-04

Laboratory: Trimatrix

Field Duplicates

Sample ID	Analyte	Units	Result	RPD	Qualifier
MW-3 MW-3D	Total Arsenic	µg/L	11	0.00	
		µg/L	11		
	Total Barium	µg/L	98	4.00	
		µg/L	102		
	Total Selenium	µg/L	3.7	31.25	
		µg/L	2.7		
	Dissolved Arsenic	µg/L	8.4	4.65	
		µg/L	8.8		
	Dissolved Barium	µg/L	113	8.47	
		µg/L	123		
	Dissolved Chromium	µg/L	6.6	7.30	
		µg/L	7.1		
	Dissolved Selenium	µg/L	3.7	19.51	
		µg/L	4.5		
R2SED-7C R2SED-7D	Arsenic	mg/kg	13	26.09	
		mg/kg	10		
	Lead	mg/kg	61	6.78	
		mg/kg	57		
R2SB-4A-A R2SB-4A-AD	Arsenic	mg/kg	28	7.41	
		mg/kg	26		
	Lead	mg/kg	2490	7.07	
		mg/kg	2320		
R2SB-2A-A R2SB-2A-AD	Arsenic	mg/kg	4.6	51.61	*
		mg/kg	7.8		
	Lead	mg/kg	816	19.87	
		mg/kg	996		
R2SB-1A-C R2SB-1A-CD	Arsenic	mg/kg	7.6	2.60	
		mg/kg	7.8		
	Lead	mg/kg	4230	16.88	
		mg/kg	5010		
R2SB-52-A R2SB-52-AD	Arsenic	mg/kg	4.6	67.63	*
		mg/kg	9.3		
	Lead	mg/kg	3.3	9.52	
		mg/kg	3		
R2SB-53-B R2SB-53-BD	Arsenic	mg/kg	300	11.91	
		mg/kg	338		
	Lead	mg/kg	58	10.91	
		mg/kg	52		
CSB-35A-H CSB-35A-HD	Arsenic	mg/kg	8.1	21.92	
		mg/kg	6.5		
	Lead	mg/kg	1520	114.54	*
		mg/kg	413		
	Antimony	mg/kg	27	84.21	*
		mg/kg	11		
	Cadmium	mg/kg	1.5	66.67	*
		mg/kg	0.75		
CSB-26A-C CSB-26A-CD	Arsenic	mg/kg	6.4	15.13	
		mg/kg	5.5		
	Lead	mg/kg	40	28.57	
		mg/kg	30		
	Antimony	mg/kg	1	40.00	
		mg/kg	1.5		
CSB-1A-D CSB-1A-DD	Arsenic	mg/kg	989	18.56	
		mg/kg	821		
	Lead	mg/kg	249000	29.49	
		mg/kg	185000		
	Antimony	mg/kg	2660	46.87	*
		mg/kg	1650		

$$2 \times RL(2) = 4, RPF = 1$$

JMS
3/28/2002

Site Name: RMC Beech Grove
Project Number: 98-478-04

Laboratory: Trimatrix

Field Duplicates

Sample ID	Analyte	Units	Result	RPD	Qualifier
	Cadmium	mg/kg	1000	97.18	*
		mg/kg	346		
CSB-28A-C CSB-28A-CD	Arsenic	mg/kg	7.9	14.12	
		mg/kg	9.1		
	Lead	mg/kg	27	125.52	*
		mg/kg	118		
CSB-30A-C CSB-30A-CD	Arsenic	mg/kg	9.1	4.30	
		mg/kg	9.5		
	Lead	mg/kg	243	6.37	
		mg/kg	228		
	Antimony	mg/kg	7	41.38	*
		mg/kg	4.6		
	Cadmium	mg/kg	0.83	15.58	
		mg/kg	0.71		
CSB-10A-C CSB-10A-CD	Arsenic	mg/kg	433	32.17	
		mg/kg	313		
	Lead	mg/kg	256000	40.94	*
		mg/kg	169000		
	Antimony	mg/kg	1720	12.35	
		mg/kg	1520		
	Cadmium	mg/kg	132	16.39	
		mg/kg	112		

Duplicate Criteria: Aqueous matrices <30 % RPD; Soil/Solid matrices <40 %RPD.

* - Denotes %RPD outside criteria.

NA - Duplicate relative percent difference cannot be calculated.

ND - Not detected.

JMS
3/28/2002

RMC Beech Grove
SERIAL DILUTIONS
Groundwater Samples

Run Date	T or D	Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50	Associated Samples
1/8/2002	D	As	295091	MW-7S	30.106	23.304	22.59	0.11	5.25 *	MW-1, MW-2, MW-3, MW-3D, MW-4, MW-5, MW-6, MW-7S, MW-8S, MW-9, EB 1-121001, EB-2-121101
		Ba			23.354	22.860	2.12	0.19	9.60	
		Cd			U	U	nc	0.01	0.50	
		Cr			13.422	8.362	37.70	0.14	6.90 *	
		Se			6.451	11.989	85.84	0.19	9.70 *	
		Pb			2.518	2.271	9.81	0.03	1.50	
1/8/2002	T	Ba	295093	MW-3	97.860	100.528	2.73	0.20	10.00	MW-3
12/16/2001	T	Sb	295091	MW-7S	U	U	nc	0.03	1.65	MW-1, MW-2, MW-3, MW-3D, MW-4, MW-5, MW-6, MW-7S, MW-8S, MW-9, EB 1-121001, EB-2-121101

* Associated sample results were qualified because %D > 10% and Initial and Serial Dilution Concs > IDL*50

Jmg
3/28/2002

RMC Beech Grove
SERIAL DILUTIONS
Soil/Sediment Samples

Run Date	Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50
1/2/2002	Sb	295539	STRW-1-121401	46.255	48.039	3.86	0.06	3.05
1/3/2002	As	295472	R2SB-53-A	8.357	8.695	4.05	0.10	4.85
1/3/2002	Sb	295536	CSB-32A-D	2.719	2.879	5.89	0.06	3.05
1/3/2002	As	295536	CSB-32A-D	8.043	8.206	2.03	0.10	4.85
1/3/2002	Cd	295536	CSB-32A-D	U	U	nc	0.03	1.4
1/4/2002	Pb	295110	R2SED-9D	38.823	37.476	3.47	0.03	1.45
1/4/2002	As	295454	R2SB-3A-C	6.339	8.230	29.83	0.10	4.85
1/4/2002	Pb	295506	CSB-38A-D	20.286	21.029	3.66	0.03	1.45
1/7/2002	As	295492	CSB-26A-D	6.220	6.248	0.45	0.10	4.85
1/7/2002	Cd	295492	CSB-26A-D	0.538	0.532	1.01	0.03	1.4
1/7/2002	Pb	295492	CSB-26A-D	24.913	25.142	0.92	0.03	1.5
1/7/2002	Sb	295492	CSB-26A-D	U	U	nc	0.06	3.05
1/7/2002	Pb	295506	CSB-38A-D	11.586	16.303	40.71	0.03	1.5
1/7/2002	Sb	295506	CSB-38A-D	U	U	nc	0.06	3.05
1/7/2002	Pb	295536	CSB-32A-D	39.695	42.511	7.09	0.03	1.5
1/7/2002	As	295539	STRW-1-121401	4.739	4.622	2.47	0.11	5.25
1/7/2002	Cd	295539	STRW-1-121401	10.543	11.527	9.33	0.01	0.5

* Associated sample results were qualified because %D >10% and Initial and Serial Dilution Concs >IDL*50

Associated samples for 295454 are 295454, 295456, 295457, 295458, 295459, 295461, 295462, 295463, 295464, 295465, 295466, 295467, 295468, 295469.

Associated samples for 295506 is 295506.

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-9	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295087

7440-36-0	Antimony, Total	<10			MS ug/L
7440-38-2	Arsenic, Total	4.0			MS ug/L
7440-39-3	Barium, Total	68			MS ug/L
7440-43-9	Cadmium, Total	<0.2			MS ug/L
7440-47-3	Chromium, Total	2.2			MS ug/L
7439-92-1	Lead, Total	<1.0			MS ug/L
7439-97-6	Mercury, Total	<0.2			CV ug/L
7782-49-2	Selenium, Total	<2.0			MS ug/L
7440-22-4	Silver, Total	<0.2			MS ug/L
7440-36-0	Antimony, Dissolved	<10			MS ug/L
7440-38-2	Arsenic, Dissolved	3.7 J			MS ug/L
7440-39-3	Barium, Dissolved	68			MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2			MS ug/L
7440-47-3	Chromium, Dissolved	3.8 J			MS ug/L
7439-92-1	Lead, Dissolved	<1.0			MS ug/L
7782-49-2	Selenium, Dissolved	2.0 UJ			MS ug/L

Sampled by: MKA/BLM
Date Sampled: 12/10/01
Time Sampled: 13:15
Date Received: 12/13/01
Time Received: 09:00

gms
3/28/2002

000064

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-1	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295088

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	27	MS ug/L
7440-39-3	Barium, Total	93	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	4.0	MS ug/L
7439-92-1	Lead, Total	3.4	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	4.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	22 <i>✓</i>	MS ug/L
7440-39-3	Barium, Dissolved	85	MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS ug/L
7440-47-3	Chromium, Dissolved	8.9 <i>✓</i>	MS ug/L
7439-92-1	Lead, Dissolved	<1.0	MS ug/L
7782-49-2	Selenium, Dissolved	4.9 <i>✓</i>	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/10/01
Time Sampled:	15:18
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000065

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced Geoservices Corporation
 Proj: RMC - Beech Grove, IN
 Subm: December 2001 Samples

Submittal Number: 35132- 32
 Location:
 Contact: Jennifer L. Rice
 Phone: (616) 975-4500

CAS No.	MW-2	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295089

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	12	MS ug/L
7440-39-3	Barium, Total	48	MS ug/L
7440-43-9	Cadmium, Total	0.4	MS ug/L
7440-47-3	Chromium, Total	4.8	MS ug/L
7439-92-1	Lead, Total	84	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	* 3.1	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	9.8 J	MS ug/L
7440-39-3	Barium, Dissolved	25	MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS ug/L
7440-47-3	Chromium, Dissolved	6.8 J	MS ug/L
7439-92-1	Lead, Dissolved	6.2	MS ug/L
7782-49-2	Selenium, Dissolved	3.7 J	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/10/01
Time Sampled:	17:11
Date Received:	12/13/01
Time Received:	09:00

* See attached Statement of Data Qualifications.

Jms
3/28/02

000066

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB1-121001 Data Qualifiers Units
C | Q | M

Lab Sample No: 295090

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-39-3	Barium, Total	<10	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L
7440-36-0	Antimony, Dissolved	<10	MS	ug/L
7440-38-2	Arsenic, Dissolved	1.0 <i>MS</i>	MS	ug/L
7440-39-3	Barium, Dissolved	<10	MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS	ug/L
7440-47-3	Chromium, Dissolved	1.0 <i>MS</i>	MS	ug/L
7439-92-1	Lead, Dissolved	<1.0	MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 <i>MS</i>	MS	ug/L

Sampled by: MKA/BLM
Date Sampled: 12/10/01
Time Sampled: 17:45
Date Received: 12/13/01
Time Received: 09:00

JMS
3/20/2002

000067

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Subm: December 2001 Samples

Phone: (616) 975-4500

CAS No.	MW-7S MS/MSD	Data Qualifiers C Q M	Units
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Lab Sample No: 295091

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	26	MS ug/L
7440-39-3	Barium, Total	25	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	2.8	MS ug/L
7439-92-1	Lead, Total	47	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	5.7	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	30 J	MS ug/L
7440-39-3	Barium, Dissolved	23	MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS ug/L
7440-47-3	Chromium, Dissolved	13 J	MS ug/L
7439-92-1	Lead, Dissolved	2.5	MS ug/L
7782-49-2	Selenium, Dissolved	6.5 J	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	09:50
Date Received:	12/13/01
Time Received:	09:00

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000068

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-8S	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295092

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	13		MS	ug/L
7440-39-3	Barium, Total	123		MS	ug/L
7440-43-9	Cadmium, Total	0.4		MS	ug/L
7440-47-3	Chromium, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	23		MS	ug/L
7439-97-6	Mercury, Total	<0.2		CV	ug/L
7782-49-2	Selenium, Total	<2.0		MS	ug/L
7440-22-4	Silver, Total	<0.2		MS	ug/L
7440-36-0	Antimony, Dissolved	<10		MS	ug/L
7440-38-2	Arsenic, Dissolved	14 <i>5</i>		MS	ug/L
7440-39-3	Barium, Dissolved	135		MS	ug/L
7440-43-9	Cadmium, Dissolved	0.3		MS	ug/L
7440-47-3	Chromium, Dissolved	3.8 <i>5</i>		MS	ug/L
7439-92-1	Lead, Dissolved	11		MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 <i>u5</i>		MS	ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	12:28
Date Received:	12/13/01
Time Received:	09:00

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3/28/2002

000069

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
 Proj: RMC - Beech Grove, IN
 Subm: December 2001 Samples

Submittal Number: 35132- 32
 Location:
 Contact: Jennifer L. Rice
 Phone: (616) 975-4500

CAS No.	MW-3	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295093

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	11	MS	ug/L
7440-39-3	Barium, Total	98	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	3.7	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L
7440-36-0	Antimony, Dissolved	<10	MS	ug/L
7440-38-2	Arsenic, Dissolved	8.4 <i>J</i>	MS	ug/L
7440-39-3	Barium, Dissolved	113	MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS	ug/L
7440-47-3	Chromium, Dissolved	6.6 <i>J</i>	MS	ug/L
7439-92-1	Lead, Dissolved	<1.0	MS	ug/L
7782-49-2	Selenium, Dissolved	3.7 <i>J</i>	MS	ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	13:51
Date Received:	12/13/01
Time Received:	09:00

Jms
3/28/2002

000070

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-3D	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295094

7440-36-0	Antimony, Total	<10			MS	ug/L
7440-38-2	Arsenic, Total	11			MS	ug/L
7440-39-3	Barium, Total	102			MS	ug/L
7440-43-9	Cadmium, Total	<0.2			MS	ug/L
7440-47-3	Chromium, Total	<1.0			MS	ug/L
7439-92-1	Lead, Total	<1.0			MS	ug/L
7439-97-6	Mercury, Total	<0.2			CV	ug/L
7782-49-2	Selenium, Total	2.7			MS	ug/L
7440-22-4	Silver, Total	<0.2			MS	ug/L
7440-36-0	Antimony, Dissolved	<10			MS	ug/L
7440-38-2	Arsenic, Dissolved	8.8	✓		MS	ug/L
7440-39-3	Barium, Dissolved	123			MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2			MS	ug/L
7440-47-3	Chromium, Dissolved	7.1	✓		MS	ug/L
7439-92-1	Lead, Dissolved	<1.0			MS	ug/L
7782-49-2	Selenium, Dissolved	4.5	✓		MS	ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	14:15
Date Received:	12/13/01
Time Received:	09:00

Jms
3/28/2002

000071

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-5	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295095

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	5.4	MS ug/L
7440-39-3	Barium, Total	150	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	2.1	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	3.7 <i>5</i>	MS ug/L
7440-39-3	Barium, Dissolved	170	MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS ug/L
7440-47-3	Chromium, Dissolved	4.0 <i>5</i>	MS ug/L
7439-92-1	Lead, Dissolved	<1.0	MS ug/L
7782-49-2	Selenium, Dissolved	<i>2.0</i> <i>WS</i>	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	15:13
Date Received:	12/13/01
Time Received:	09:00

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3/28/02

000072

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-4	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295096

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	<1.0	MS ug/L
7440-39-3	Barium, Total	187	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	1.5	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	1.0 <i>us</i>	MS ug/L
7440-39-3	Barium, Dissolved	203	MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS ug/L
7440-47-3	Chromium, Dissolved	3.4 <i>s</i>	MS ug/L
7439-92-1	Lead, Dissolved	<1.0	MS ug/L
7782-49-2	Selenium, Dissolved	2.0 <i>us</i>	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	16:14
Date Received:	12/13/01
Time Received:	09:00

JMS
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000073

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	MW-6	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295097

7440-36-0	Antimony, Total	<10	MS ug/L
7440-38-2	Arsenic, Total	2.2	MS ug/L
7440-39-3	Barium, Total	79	MS ug/L
7440-43-9	Cadmium, Total	<0.2	MS ug/L
7440-47-3	Chromium, Total	<1.0	MS ug/L
7439-92-1	Lead, Total	1.3	MS ug/L
7439-97-6	Mercury, Total	<0.2	CV ug/L
7782-49-2	Selenium, Total	<2.0	MS ug/L
7440-22-4	Silver, Total	<0.2	MS ug/L
7440-36-0	Antimony, Dissolved	<10	MS ug/L
7440-38-2	Arsenic, Dissolved	1.4 J	MS ug/L
7440-39-3	Barium, Dissolved	89	MS ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS ug/L
7440-47-3	Chromium, Dissolved	3.8 J	MS ug/L
7439-92-1	Lead, Dissolved	<1.0	MS ug/L
7782-49-2	Selenium, Dissolved	2.0 WJ	MS ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/11/01
Time Sampled:	17:25
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000074

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB2-121101 Data Qualifiers Units
C | Q | M

Lab Sample No: 295098

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-39-3	Barium, Total	<10	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7440-47-3	Chromium, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L
7439-97-6	Mercury, Total	<0.2	CV	ug/L
7782-49-2	Selenium, Total	<2.0	MS	ug/L
7440-22-4	Silver, Total	<0.2	MS	ug/L
7440-36-0	Antimony, Dissolved	<10	MS	ug/L
7440-38-2	Arsenic, Dissolved	1.0 <i>us</i>	MS	ug/L
7440-39-3	Barium, Dissolved	<10	MS	ug/L
7440-43-9	Cadmium, Dissolved	<0.2	MS	ug/L
7440-47-3	Chromium, Dissolved	1.0 <i>us</i>	MS	ug/L
7439-92-1	Lead, Dissolved	<1.0	MS	ug/L
7782-49-2	Selenium, Dissolved	2.0 <i>us</i>	MS	ug/L

Sampled by: MKA/BLM
Date Sampled: 12/11/01
Time Sampled: 17:45
Date Received: 12/13/01
Time Received: 09:00

Jms
3/28/2002

000075

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-1C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295099

7440-38-2	Arsenic, Total	10	MS	mg/kg dry
7439-92-1	Lead, Total	19 <i>J</i>	MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	11:25
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000076

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-1D	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295100

7440-38-2	Arsenic, Total	5.5	MS mg/kg dry
7439-92-1	Lead, Total	62 J	MS mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	11:36
Date Received:	12/13/01
Time Received:	09:00

JMR
3/28/2002

000077

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-3C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295101

7440-38-2 Arsenic, Total

13

MS mg/kg dry

7439-92-1 Lead, Total

622 J

MS mg/kg dry

Sampled by:

MKA/BLM

Date Sampled:

12/12/01

Time Sampled:

12:10

Date Received:

12/13/01

Time Received:

09:00

JMR
3/25/2002

000078

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-3D	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295102

7440-38-2	Arsenic, Total	12		MS	mg/kg dry
7439-92-1	Lead, Total	691		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	12:20
Date Received:	12/13/01
Time Received:	09:00

JMR
12/28/2002

000079

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-5C	Data Qualifiers	Units
		C Q M	

Lab Sample No:	295103
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7440-38-2	Arsenic, Total	5.7		MS	mg/kg dry
7439-92-1	Lead, Total	73		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	12:40
Date Received:	12/13/01
Time Received:	09:00

JMR
3/28/2002

000080

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SED-SD	Data Qualifiers	Units
		C Q M	

Lab Sample No:	295104
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7440-38-2	Arsenic, Total	7.3			MS	mg/kg dry
7439-92-1	Lead, Total	20 <i>5</i>			MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	12:50
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000081

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB3-121201 Data Qualifiers Units
C | Q | M

Lab Sample No: 295105

7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	13:05
Date Received:	12/13/01
Time Received:	09:00

mid
12/28/2002

000082

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-7C	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295106

7440-38-2	Arsenic, Total	13	MS	mg/kg dry
7439-92-1	Lead, Total	61 <i>5</i>	MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	13:38
Date Received:	12/13/01
Time Received:	09:00

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3/28/02

000083

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-7D	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295107

7440-38-2	Arsenic, Total	9.2	MS	mg/kg dry
7439-92-1	Lead, Total	27 <i>5</i>	MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	13:40
Date Received:	12/13/01
Time Received:	09:00

ms
3/28/2002

000084

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-7CD	Data Qualifiers	Units
		C Q M	

Lab Sample No: 295108

7440-38-2	Arsenic, Total	10		MS	mg/kg dry
7439-92-1	Lead, Total	57 <i>S</i>		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	13:58
Date Received:	12/13/01
Time Received:	09:00

ms
3/28/2002

000085

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 2001 Samples

Submittal Number: 35132- 32

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SED-9C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295109

7440-38-2 Arsenic, Total

8.9

MS mg/kg dry

7439-92-1 Lead, Total

25 *3*

MS mg/kg dry

Sampled by:

MKA/BLM

Date Sampled:

12/12/01

Time Sampled:

14:15

Date Received:

12/13/01

Time Received:

09:00

ms
3/28/2002
000086

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SED-9D MS/MSD	Data Qualifiers C Q M	Units
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Lab Sample No: 295110

7440-38-2	Arsenic, Total	8.2	MS mg/kg dry
7439-92-1	Lead, Total	39	MS mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	14:20
Date Received:	12/13/01
Time Received:	09:00

* See attached Statement of Data Qualifications.

ms
3/28/2002

000087

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-51-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295111

7440-38-2	Arsenic, Total	6.6	MS	mg/kg dry
7439-92-1	Lead, Total	285	MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	15:05
Date Received:	12/13/01
Time Received:	09:00

JMS
3/28/2002

000088

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 2001 Samples

Submittal Number: 35132- 32
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-51-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295112

7440-38-2	Arsenic, Total	7.0		MS	mg/kg dry
7439-92-1	Lead, Total	199		MS	mg/kg dry

Sampled by:	MKA/BLM
Date Sampled:	12/12/01
Time Sampled:	15:06
Date Received:	12/13/01
Time Received:	09:00

*ms
2/28/02*

000089

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Subm: 12/13-14/01 Samples

Phone: (616) 975-4500

CAS No.

R2SB-4A-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295447

7440-38-2 Arsenic, Total

28 J

| MS mg/kg dry

7439-92-1 Lead, Total

2490

| MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

10:20

Date Received:

12/17/01

Time Received:

09:15

MS
12/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	EB1-121301	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295448

7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	10:25
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-4A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295449

7440-38-2	Arsenic, Total	13 ⁵	MS	mg/kg dry
7439-92-1	Lead, Total	874	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	10:29
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-4A-4D Data Qualifiers Units
C | Q | M

Lab Sample No: 295450

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total26 ⁵
2320| MS mg/kg dry
| MS mg/kg drySampled by: BLM/MAC
Date Sampled: 12/13/01
Time Sampled: 10:45
Date Received: 12/17/01
Time Received: 09:15*JMS*
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-4A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295451
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7440-38-2	Arsenic, Total	18 ⁵			MS	mg/kg dry
7439-92-1	Lead, Total	1420			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	10:46
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-3A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295452

7440-38-2	Arsenic, Total	36 ⁵		MS	mg/kg dry
7439-92-1	Lead, Total	1620		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	11:29
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-3A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295453

7440-38-2	Arsenic, Total	19	MS	mg/kg dry
7439-92-1	Lead, Total	1410	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	11:35
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

gms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

Subm: 12/13-14/01 Samples

CAS No.	R2SB-3A-C	Data Qualifiers	Units
	MS/MSD	C Q M	

Lab Sample No: 295454

7440-38-2	Arsenic, Total	6.3	MS mg/kg dry
7439-92-1	Lead, Total	1330	MS mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	11:40
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

gms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB2-121301 Data Qualifiers Units
C | Q | M

Lab Sample No: 295455

7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	11:55
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-2A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295456

7440-38-2	Arsenic, Total	16 <i>J</i>		MS	mg/kg dry
7439-92-1	Lead, Total	918		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:07
Date Received:	12/17/01
Time Received:	09:15

JMR
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-2A-B Data Qualifiers Units
C | Q | M

Lab Sample No: 295457

7440-38-2	Arsenic, Total	15 <i>5</i>			MS	mg/kg dry
7439-92-1	Lead, Total	4120			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:16
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-2A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295458

7440-38-2	Arsenic, Total	4.6 <i>J</i>		MS	mg/kg dry
7439-92-1	Lead, Total	816		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:20
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-2A-AD Data Qualifiers Units
C | Q | M

Lab Sample No: 295459

7440-38-2	Arsenic, Total	7.8 <i>J</i>			MS mg/kg dry
7439-92-1	Lead, Total	996			MS mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:27
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB3-121301 Data Qualifiers Units
C | Q | M

Lab Sample No: 295460

7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:48
Date Received:	12/17/01
Time Received:	09:15

*ms
3/28/2002*

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	R2SB-1A-A	Data Qualifiers	Units
	MS/MSD	C Q M	

Lab Sample No: 295461

7440-38-2	Arsenic, Total	58 <i>5</i>			MS	mg/kg dry
7439-92-1	Lead, Total	2250			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	12:52
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/200

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-1A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295462

7440-38-2	Arsenic, Total	7.6			MS	mg/kg dry
7439-92-1	Lead, Total	609			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	13:05
Date Received:	12/17/01
Time Received:	09:15

JMD
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	R2SB-1A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295463

7440-38-2	Arsenic, Total	7.8 <i>5</i>		MS	mg/kg dry
7439-92-1	Lead, Total	4230		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	13:27
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-1A-CD Data Qualifiers Units
C | Q | M

Lab Sample No: 295464

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

8.3 J | MS mg/kg dry
5010 | MS mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/13/01
Time Sampled: 13:57
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-13A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295465

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

14	5			MS	mg/kg dry
2910				MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	14:11
Date Received:	12/17/01
Time Received:	09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-13A-B Data Qualifiers Units

C | Q | M

Lab Sample No: 295466

7440-38-2 Arsenic, Total

2.1 *5*

| MS mg/kg dry

7439-92-1 Lead, Total

24

| MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

14:17

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. R2SB-13A-C Data Qualifiers Units
C | Q | M

Lab Sample No: 295467

7440-38-2	Arsenic, Total	4.5			MS	mg/kg dry
7439-92-1	Lead, Total	11			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	14:25
Date Received:	12/17/01
Time Received:	09:15

Jms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-52-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295468

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total

4.6	J			MS	mg/kg dry
300				MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	15:01
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-52-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295469

7440-38-2 Arsenic, Total

3.3

MS mg/kg dry

7439-92-1 Lead, Total

5.7

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

15:12

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB5-121301 Data Qualifiers Units

C | Q | M

Lab Sample No: 295470

7440-38-2 Arsenic, Total

<1.0

MS ug/L

7439-92-1 Lead, Total

<1.0

MS ug/L

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

15:16

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-52-AD Data Qualifiers Units
C | Q | M

Lab Sample No: 295471

7440-38-2 Arsenic, Total
7439-92-1 Lead, Total9.3 *J*
338| MS mg/kg dry
| MS mg/kg drySampled by: BLM/MAC
Date Sampled: 12/13/01
Time Sampled: 15:21
Date Received: 12/17/01
Time Received: 09:15*JMS*
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-53-A

Data Qualifiers

Units

MS/MSD

C

Q

M

Lab Sample No:

295472

7440-38-2 Arsenic, Total

8.4

MS mg/kg dry

7439-92-1 Lead, Total

499

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

16:05

Date Received:

12/17/01

Time Received:

09:15

* See attached Statement of Data Qualifications.

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-53-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295473

7440-38-2 Arsenic, Total

3.3 *J*

MS mg/kg dry

7439-92-1 Lead, Total

58

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

16:10

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

R2SB-53-BD Data Qualifiers Units
C | Q | M

Lab Sample No: 295474

7440-38-2	Arsenic, Total	3.0 ⁵			MS	mg/kg dry
7439-92-1	Lead, Total	52			MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/13/01
Time Sampled:	16:30
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB6-121301 Data Qualifiers Units

C | Q | M

Lab Sample No:

295475

7440-38-2 Arsenic, Total

<1.0

MS ug/L

7439-92-1 Lead, Total

2.6

MS ug/L

Sampled by:

BLM/MAC

Date Sampled:

12/13/01

Time Sampled:

16:36

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

EB1-121401 Data Qualifiers Units

C | Q | M

Lab Sample No:

295476

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7439-92-1	Lead, Total	1.4	MS	ug/L

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

09:20

Date Received:

12/17/01

Time Received:

09:15

JMR
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

EB2-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295477

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	2.1		MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	10:05
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-35A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295478

7440-36-0	Antimony, Total	1280			MS	mg/kg	dry
7440-38-2	Arsenic, Total	154			MS	mg/kg	dry
7440-43-9	Cadmium, Total	83			MS	mg/kg	dry
7439-92-1	Lead, Total	70400			MS	mg/kg	dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 12:41
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-B Data Qualifiers Units
C | Q | M

Lab Sample No: 295479

7440-36-0	Antimony, Total	5.3		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.1		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.66		MS	mg/kg dry
7439-92-1	Lead, Total	279		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:42
Date Received:	12/17/01
Time Received:	09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-35A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295480

7440-36-0	Antimony, Total	3150	MS	mg/kg dry
7440-38-2	Arsenic, Total	408	MS	mg/kg dry
7440-43-9	Cadmium, Total	144	MS	mg/kg dry
7439-92-1	Lead, Total	350000	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:43
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation

Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-D

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295481

7440-36-0	Antimony, Total	4.9	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.0	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.62	MS	mg/kg dry
7439-92-1	Lead, Total	285	MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

12:44

Date Received:

12/17/01

Time Received:

09:15

Jms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.

CSB-35A-E Data Qualifiers Units
C | Q | M

Lab Sample No: 295482

7440-36-0	Antimony, Total	3.9		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.3		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.99		MS	mg/kg dry
7439-92-1	Lead, Total	499		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:45
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-35A-F	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295483

7440-36-0	Antimony, Total	1.7	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.3	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	69	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:50
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-35A-G	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295484

7440-36-0	Antimony, Total	6.3	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.6	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.89	MS	mg/kg dry
7439-92-1	Lead, Total	156	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:53
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-H Data Qualifiers Units
C | Q | M

Lab Sample No: 295485

7440-36-0	Antimony, Total	27 <i>J</i>		MS	mg/kg dry
7440-38-2	Arsenic, Total	8.1		MS	mg/kg dry
7440-43-9	Cadmium, Total	1.5 <i>J</i>		MS	mg/kg dry
7439-92-1	Lead, Total	1520 <i>J</i>		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	12:54
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-35A-I Data Qualifiers Units
C | Q | M

Lab Sample No: 295486

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.9		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	11		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 12:55
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-J Data Qualifiers Units

C | Q | M

Lab Sample No:

295487

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	4.1		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	11		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

12:56

Date Received:

12/17/01

Time Received:

09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-35A-HD Data Qualifiers Units
C | Q | M

Lab Sample No: 295488

7440-36-0	Antimony, Total	11	5		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.5			MS	mg/kg dry
7440-43-9	Cadmium, Total	0.75	3		MS	mg/kg dry
7439-92-1	Lead, Total	413	3		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:14
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/2002



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-26A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295489

7440-36-0	Antimony, Total	6.4	MS	mg/kg dry
7440-38-2	Arsenic, Total	12	MS	mg/kg dry
7440-43-9	Cadmium, Total	46	MS	mg/kg dry
7439-92-1	Lead, Total	174	MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 13:25
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-26A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295490

7440-36-0	Antimony, Total	1.7	MS	mg/kg dry
7440-38-2	Arsenic, Total	11	MS	mg/kg dry
7440-43-9	Cadmium, Total	40	MS	mg/kg dry
7439-92-1	Lead, Total	88	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:26
Date Received:	12/17/01
Time Received:	09:15

JMS
12/20/2002

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-26A-C Data Qualifiers Units
 C | Q | M

Lab Sample No: 295491

7440-36-0	Antimony, Total	1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.4		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	40		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:28
Date Received:	12/17/01
Time Received:	09:15

ms
3/25/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-26A-D Data Qualifiers Units
MS/MSD C | Q | M

Lab Sample No: 295492

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.2		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.54		MS	mg/kg dry
7439-92-1	Lead, Total	25		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:30
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-26A-E Data Qualifiers Units

C | Q | M

Lab Sample No:

295493

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.8		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	23		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

13:35

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB4-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295494

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 13:34
Date Received: 12/17/01
Time Received: 09:15

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3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-26A-CD	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295495

7440-36-0	Antimony, Total	1.5	MS	mg/kg dry
7440-38-2	Arsenic, Total	5.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.53	MS	mg/kg dry
7439-92-1	Lead, Total	30	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:48
Date Received:	12/17/01
Time Received:	09:15

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**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295496

7440-36-0	Antimony, Total	3.4	MS	mg/kg dry
7440-38-2	Arsenic, Total	3.2	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	903	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:55
Date Received:	12/17/01
Time Received:	09:15

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3/28/2002*

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295497

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	1.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	18	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:56
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-1A-C

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295498

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	1.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	44	MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

13:59

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 SamplesSubmittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-D	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295499
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7440-36-0	Antimony, Total	2660 J	MS	mg/kg dry
7440-38-2	Arsenic, Total	989	MS	mg/kg dry
7440-43-9	Cadmium, Total	1000 J	MS	mg/kg dry
7439-92-1	Lead, Total	249000	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	13:59
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295500

7440-36-0	Antimony, Total	16 5	MS mg/kg dry
7440-38-2	Arsenic, Total	6.8	MS mg/kg dry
7440-43-9	Cadmium, Total	1.7	MS mg/kg dry
7439-92-1	Lead, Total	847	MS mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:01
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB5-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295501

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 14:05
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-DD	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295502

7440-36-0	Antimony, Total	1650 <i>5</i>	MS	mg/kg dry
7440-38-2	Arsenic, Total	821	MS	mg/kg dry
7440-43-9	Cadmium, Total	346 <i>5</i>	MS	mg/kg dry
7439-92-1	Lead, Total	185000	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:19
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-38A-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295503

7440-36-0	Antimony, Total	156 ³	MS	mg/kg dry
7440-38-2	Arsenic, Total	67	MS	mg/kg dry
7440-43-9	Cadmium, Total	110	MS	mg/kg dry
7439-92-1	Lead, Total	6200	MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

14:19

Date Received:

12/17/01

Time Received:

09:15

JMR
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-38A-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295504

7440-36-0 Antimony, Total

11.0 *us*

MS mg/kg dry

7440-38-2 Arsenic, Total

7.9

MS mg/kg dry

7440-43-9 Cadmium, Total

<0.50

MS mg/kg dry

7439-92-1 Lead, Total

14

MS mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

14:20

Date Received:

12/17/01

Time Received:

09:15

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12/28/02*

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-38A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295505

7440-36-0	Antimony, Total	11.0 <i>us</i>		MS	mg/kg dry
7440-38-2	Arsenic, Total	9.3		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	22		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:22
Date Received:	12/17/01
Time Received:	09:15

*ms
3/28/02*

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-38A-D Data Qualifiers Units
MS/MSD C | Q | M

Lab Sample No: 295506

7440-36-0	Antimony, Total	41.0 <i>us</i>		MS	mg/kg dry
7440-38-2	Arsenic, Total	2.5	J	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	12		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 14:23
Date Received: 12/17/01
Time Received: 09:15

* See attached Statement of Data Qualifications.

JMS
3/26/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-38A-E	Data Qualifiers	Units
	C	Q M	

Lab Sample No: 295507

7440-36-0	Antimony, Total	6.2		MS	mg/kg dry
7440-38-2	Arsenic, Total	8.6		MS	mg/kg dry
7440-43-9	Cadmium, Total	6.8		MS	mg/kg dry
7439-92-1	Lead, Total	319		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:27
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-13A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295508

7440-36-0	Antimony, Total	80	MS	mg/kg dry
7440-38-2	Arsenic, Total	11	MS	mg/kg dry
7440-43-9	Cadmium, Total	64	MS	mg/kg dry
7439-92-1	Lead, Total	2300	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:45
Date Received:	12/17/01
Time Received:	09:15

JMR
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-13A-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295509

7440-36-0	Antimony, Total	197		MS	mg/kg dry
7440-38-2	Arsenic, Total	22		MS	mg/kg dry
7440-43-9	Cadmium, Total	29		MS	mg/kg dry
7439-92-1	Lead, Total	1070		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

14:46

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-13A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295510

7440-36-0	Antimony, Total	5.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.6		MS	mg/kg dry
7440-43-9	Cadmium, Total	36		MS	mg/kg dry
7439-92-1	Lead, Total	75		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:47
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-13A-D	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295511

7440-36-0	Antimony, Total	1.9	MS	mg/kg dry
7440-38-2	Arsenic, Total	5.9	MS	mg/kg dry
7440-43-9	Cadmium, Total	1.7	MS	mg/kg dry
7439-92-1	Lead, Total	39	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:48
Date Received:	12/17/01
Time Received:	09:15

JMS
12/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-13A-E Data Qualifiers Units
C | Q | M

Lab Sample No: 295512

7440-36-0	Antimony, Total	2.9 ⁵		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.0		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.99		MS	mg/kg dry
7439-92-1	Lead, Total	27		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	14:49
Date Received:	12/17/01
Time Received:	09:15

MS 3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

Subm: 12/13-14/01 Samples

CAS No. EB7-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295513

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 14:58
Date Received: 12/17/01
Time Received: 09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-28A-A Data Qualifiers Units
C | Q | M

Lab Sample No: 295514

7440-36-0	Antimony, Total	5.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	53		MS	mg/kg dry
7440-43-9	Cadmium, Total	17		MS	mg/kg dry
7439-92-1	Lead, Total	30		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:12
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-28A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No:	295515
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7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	5.1	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	13	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:15
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

Subm: 12/13-14/01 Samples

CAS No.

CSB-28A-C Data Qualifiers Units
C | Q | M

Lab Sample No: 295516

7440-36-0	Antimony, Total	<1.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	7.9		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	27 <i>5</i>		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:16
Date Received:	12/17/01
Time Received:	09:15

JMS
12/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-28A-D	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295517

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	14	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:17
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-28A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295518

7440-36-0	Antimony, Total	11.0 <i>us</i>	MS	mg/kg dry
7440-38-2	Arsenic, Total	9.4	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	16	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:11
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-28A-CD Data Qualifiers Units
C | Q | M

Lab Sample No: 295519

7440-36-0	Antimony, Total	3.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	9.1		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50		MS	mg/kg dry
7439-92-1	Lead, Total	118 <i>5</i>		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:36
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-30A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295520

7440-36-0	Antimony, Total	63	MS	mg/kg dry
7440-38-2	Arsenic, Total	30 <i>5</i>	MS	mg/kg dry
7440-43-9	Cadmium, Total	4.2	MS	mg/kg dry
7439-92-1	Lead, Total	2360	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:42
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-30A-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295521

7440-36-0	Antimony, Total	14		MS	mg/kg dry
7440-38-2	Arsenic, Total	13 <i>5</i>		MS	mg/kg dry
7440-43-9	Cadmium, Total	1.3		MS	mg/kg dry
7439-92-1	Lead, Total	366		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

15:43

Date Received:

12/17/01

Time Received:

09:15

ms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB8-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295522

7440-36-0	Antimony, Total	<10		MS	ug/L
7440-38-2	Arsenic, Total	<1.0		MS	ug/L
7440-43-9	Cadmium, Total	<0.2		MS	ug/L
7439-92-1	Lead, Total	<1.0		MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 15:44
Date Received: 12/17/01
Time Received: 09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. CSB-30A-C Data Qualifiers Units
C | Q | M

Lab Sample No: 295523

7440-36-0	Antimony, Total	7.0 <i>J</i>		MS	mg/kg dry
7440-38-2	Arsenic, Total	9.1 <i>J</i>		MS	mg/kg dry
7440-43-9	Cadmium, Total	0.83		MS	mg/kg dry
7439-92-1	Lead, Total	243		MS	mg/kg dry

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 15:48
Date Received: 12/17/01
Time Received: 09:15

JMD
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-30A-D	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295524

7440-36-0	Antimony, Total	1.2			MS	mg/kg	dry
7440-38-2	Arsenic, Total	6.6	✓		MS	mg/kg	dry
7440-43-9	Cadmium, Total	<0.50			MS	mg/kg	dry
7439-92-1	Lead, Total	32			MS	mg/kg	dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:49
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-30A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295525

7440-36-0	Antimony, Total	<1.0	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.6 <i>J</i>	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	13 <i>U</i>	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	15:51
Date Received:	12/17/01
Time Received:	09:15

gms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-A

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295526

7440-36-0	Antimony, Total	5.7	MS	mg/kg dry
7440-38-2	Arsenic, Total	4.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.59	MS	mg/kg dry
7439-92-1	Lead, Total	1780	MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

16:13

Date Received:

12/17/01

Time Received:

09:15

*ms
3/28/2002*

ANALYTICAL REPORT
USEPA CLP FORM 1**Advanced GeoServices Corporation**

Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-B

Data Qualifiers

Units

C | Q | M

Lab Sample No:

295527

7440-36-0	Antimony, Total	31 ⁵		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.1		MS	mg/kg dry
7440-43-9	Cadmium, Total	1.3		MS	mg/kg dry
7439-92-1	Lead, Total	1210		MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

16:14

Date Received:

12/17/01

Time Received:

09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-C Data Qualifiers Units
C | Q | M

Lab Sample No: 295528

7440-36-0	Antimony, Total	1720		MS	mg/kg dry
7440-38-2	Arsenic, Total	433		MS	mg/kg dry
7440-43-9	Cadmium, Total	132		MS	mg/kg dry
7439-92-1	Lead, Total	256000 5		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:16
Date Received:	12/17/01
Time Received:	09:15

MS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No. EB9-121401 Data Qualifiers Units
C | Q | M

Lab Sample No: 295529

7440-36-0	Antimony, Total	<10	MS	ug/L
7440-38-2	Arsenic, Total	<1.0	MS	ug/L
7440-43-9	Cadmium, Total	<0.2	MS	ug/L
7439-92-1	Lead, Total	<1.0	MS	ug/L

Sampled by: BLM/MAC
Date Sampled: 12/14/01
Time Sampled: 16:18
Date Received: 12/17/01
Time Received: 09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-30A-CD	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295530

7440-36-0	Antimony, Total	4.6	MS	mg/kg dry
7440-38-2	Arsenic, Total	9.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.71	MS	mg/kg dry
7439-92-1	Lead, Total	228	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:18
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-D	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 295531

7440-36-0	Antimony, Total	4260		MS	mg/kg dry
7440-38-2	Arsenic, Total	2730		MS	mg/kg dry
7440-43-9	Cadmium, Total	527		MS	mg/kg dry
7439-92-1	Lead, Total	475000		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:21
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-E	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295532

7440-36-0	Antimony, Total	6.7	MS	mg/kg dry
7440-38-2	Arsenic, Total	7.1 <i>J</i>	MS	mg/kg dry
7440-43-9	Cadmium, Total	0.61	MS	mg/kg dry
7439-92-1	Lead, Total	253	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:22
Date Received:	12/17/01
Time Received:	09:15

ms
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-32A-A	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295533

7440-36-0	Antimony, Total	2190 J	MS	mg/kg dry
7440-38-2	Arsenic, Total	394	MS	mg/kg dry
7440-43-9	Cadmium, Total	158	MS	mg/kg dry
7439-92-1	Lead, Total	164000	MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:56
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-32A-B	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295534

7440-36-0	Antimony, Total	1060 ⁵	MS mg/kg dry
7440-38-2	Arsenic, Total	199	MS mg/kg dry
7440-43-9	Cadmium, Total	47	MS mg/kg dry
7439-92-1	Lead, Total	90100	MS mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:57
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

JMR
12/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-32A-C	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 295535

7440-36-0	Antimony, Total	1010 J	MS	mg/kg	dry
7440-38-2	Arsenic, Total	230	MS	mg/kg	dry
7440-43-9	Cadmium, Total	38	MS	mg/kg	dry
7439-92-1	Lead, Total	64000	MS	mg/kg	dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:58
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

JMS
3/28/02

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-32A-D	Data Qualifiers	Units
	MS/MSD	C Q M	

Lab Sample No: 295536

7440-36-0	Antimony, Total	2.7		MS	mg/kg dry
7440-38-2	Arsenic, Total	8.0 J		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	J	MS	mg/kg dry
7439-92-1	Lead, Total	40		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:59
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1****Advanced GeoServices Corporation**
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-32A-E Data Qualifiers Units
C | Q | M

Lab Sample No:

295537

7440-36-0	Antimony, Total	1.5	MS	mg/kg dry
7440-38-2	Arsenic, Total	6.5 J	MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	MS	mg/kg dry
7439-92-1	Lead, Total	20 U	MS	mg/kg dry

Sampled by:

BLM/MAC

Date Sampled:

12/14/01

Time Sampled:

17:01

Date Received:

12/17/01

Time Received:

09:15

*JMS
3/28/2002*

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-CD Data Qualifiers Units
C | Q | M

Lab Sample No: 295538

7440-36-0	Antimony, Total	1520 J		MS	mg/kg dry
7440-38-2	Arsenic, Total	313		MS	mg/kg dry
7440-43-9	Cadmium, Total	112		MS	mg/kg dry
7439-92-1	Lead, Total	169000 J		MS	mg/kg dry

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	16:36
Date Received:	12/17/01
Time Received:	09:15

JMS
3/28/2002

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: 12/13-14/01 Samples

Submittal Number: 35132- 33
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	STRW-1	Data Qualifiers	Units
	121401	C Q M	

Lab Sample No: 295539

7440-36-0	Antimony, Total	46 ⁵	MS	ug/L
7440-38-2	Arsenic, Total	4.7 ⁵	MS	ug/L
7440-43-9	Cadmium, Total	11	MS	ug/L
7439-92-1	Lead, Total	811	MS	ug/L

Sampled by:	BLM/MAC
Date Sampled:	12/14/01
Time Sampled:	17:30
Date Received:	12/17/01
Time Received:	09:15

* See attached Statement of Data Qualifications.

gms
3/28/2002

INORGANIC DATA VALIDATION SUMMARY

Site Name:

Beechgrove RMC

Project Number:

98-478-05

Sampling Date(s):

12/14/01

Laboratory:

Trimatrix

Case /Order No.:

35/32-34

Compound List:

☐ TAL

☐ Priority Pollutant

☐ Appendix IX

☒ Other

Sb, As, Cd, Pb

Method:

☐ CLP SOW ILMO4.

☐ 40 CFR 136

☒ SW-846 Method

☐ Other

6020

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Initial Calibrations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Continuing Calibrations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	% Recovery > 110%, No associated samples
CRDL Standards	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blank Analysis Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ICP Interference Check Sample Recoveries	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Duplicate Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Field Duplicate Results	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CSB-10A-H CSB-10A-HS
Spike Analysis Recoveries	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	MS/MSD unavailable for CSB-1A-F due to high analyte conc.
Serial Dilution Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Laboratory Control Sample Results	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Furnace AA QC Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NA
Quantitation/Detection Limits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Overall Assessment of Data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

General Comments:

Accept - No qualification required.

FYI - For your information only, no qualification necessary.

Qualify - Qualify as rejected, estimated or biased

NA - Not applicable.

NR - Not reviewed.

QA Scientist

Matthew Potter

Date

2/18/02

ANALYTICAL REPORT
USEPA CLP FORM 1Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-F	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297370

7440-36-0	Antimony, Total	1.7	MS	mg/kg dry
7440-38-2	Arsenic, Total	8.5	MS	mg/kg dry
7440-43-9	Cadmium, Total	2.0	MS	mg/kg dry
7439-92-1	Lead, Total	X 170	MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:07
Date Received:	01/24/02
Time Received:	09:10

* See attached Statement of Data Qualifications.

MP 2/18/02
000015

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-G	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297371

7440-36-0	Antimony, Total	1.6		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.6		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	U	MS	mg/kg dry
7439-92-1	Lead, Total	65		MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:09
Date Received:	01/24/02
Time Received:	09:10

MP 2/12/02

**ANALYTICAL REPORT
USEPA CLP FORM 1**

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-1A-H

Data Qualifiers

Units

C | Q | M

Lab Sample No:

297372

7440-36-0	Antimony, Total	2.0		MS	mg/kg dry
7440-38-2	Arsenic, Total	6.0		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	U	MS	mg/kg dry
7439-92-1	Lead, Total	82		MS	mg/kg dry

Sampled by:

BMG/MA

Date Sampled:

12/14/01

Time Sampled:

14:10

Date Received:

01/24/02

Time Received:

09:10

MP 2/18/02

000017



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-1A-I	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297373

7440-36-0	Antimony, Total	1.4		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.7		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	U	MS	mg/kg dry
7439-92-1	Lead, Total	47		MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	14:12
Date Received:	01/24/02
Time Received:	09:10

WP 2/18/02

000018



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-1A-J	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297374

7440-36-0	Antimony, Total	3.6		MS	mg/kg dry
7440-38-2	Arsenic, Total	5.7		MS	mg/kg dry
7440-43-9	Cadmium, Total	<0.50	U	MS	mg/kg dry
7439-92-1	Lead, Total	144		MS	mg/kg dry

Sampled by: BMG/MA
Date Sampled: 12/14/01
Time Sampled: 14:13
Date Received: 01/24/02
Time Received: 09:10

MR 2/12/02
000019



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-F	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297375

7440-36-0	Antimony, Total	2960	MS	mg/kg dry
7440-38-2	Arsenic, Total	1700	MS	mg/kg dry
7440-43-9	Cadmium, Total	363	MS	mg/kg dry
7439-92-1	Lead, Total	288000	MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	16:25
Date Received:	01/24/02
Time Received:	09:10

MAP 2/18/02

000020



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN
Subm: December 14, 2001 Samples

Submittal Number: 35132- 34
Location:
Contact: Jennifer L. Rice
Phone: (616) 975-4500

CAS No.	CSB-10A-G	Data Qualifiers	Units
	C	Q	M

Lab Sample No: 297376

7440-36-0	Antimony, Total	12	MS	mg/kg	dry
7440-38-2	Arsenic, Total	28	MS	mg/kg	dry
7440-43-9	Cadmium, Total	7.2	MS	mg/kg	dry
7439-92-1	Lead, Total	1090	MS	mg/kg	dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	16:26
Date Received:	01/24/02
Time Received:	09:10

MP 2/18/02

000021



ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.	CSB-10A-H	Data Qualifiers			Units
		C	Q	M	

Lab Sample No: 297377

7440-36-0	Antimony, Total	1.8		MS	mg/kg dry
7440-38-2	Arsenic, Total	11		MS	mg/kg dry
7440-43-9	Cadmium, Total	5.1		MS	mg/kg dry
7439-92-1	Lead, Total	101	J	MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	16:28
Date Received:	01/24/02
Time Received:	09:10

WP 2/18/02

000022

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-HD Data Qualifiers Units
C | Q | M

Lab Sample No: 297378

7440-36-0	Antimony, Total	1.6		MS	mg/kg dry
7440-38-2	Arsenic, Total	14		MS	mg/kg dry
7440-43-9	Cadmium, Total	4.7		MS	mg/kg dry
7439-92-1	Lead, Total	42	J	MS	mg/kg dry

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	16:48
Date Received:	01/24/02
Time Received:	09:10

IMP 2/18/02

000023

ANALYTICAL REPORT
USEPA CLP FORM 1

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Subm: December 14, 2001 Samples

Submittal Number: 35132- 34

Location:

Contact: Jennifer L. Rice

Phone: (616) 975-4500

CAS No.

CSB-10A-I Data Qualifiers Units
C | Q | M

Lab Sample No: 297379

7440-36-0	Antimony, Total	6.1		MS	mg/kg dry
7440-38-2	Arsenic, Total	44		MS	mg/kg dry
7440-43-9	Cadmium, Total	20		MS	mg/kg dry
7439-92-1	Lead, Total	365		MS	mg/kg dry

SAWD

Sampled by:	BMG/MA
Date Sampled:	12/14/01
Time Sampled:	16:30
Date Received:	01/24/02
Time Received:	09:10

UMP 2/18/02

000024

QUALITY CONTROL REPORT
INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV-CCV)
USEPA CLP FORM 2A

SDG No.	35132 -34	Parameter	Lead, Total
Batch No.	181639	Ref. Cit.	EPA-200.8/6020
Instrument ID	114	Matrix	WATER
		Units	ug/L

Verification QC Type	True Value	Amount Found	% Recovery	Acceptance Window-%	Date	Analyst
ICV 1	100	97.6	98	90 - 110	01/28/02	SMC
CCV 1	50	49.3	99	90 - 110	01/28/02	SPLM
CCV 2	50	50.1	100	90 - 110	01/28/02	SPLM
CCV 3	50	50.1	100	90 - 110	01/28/02	SPLM
CCV 4	40	49.5	<u>124</u>	90 - 110	01/28/02	SPLM

Sample associated CSP-10A-I
No Associated samples

AWD 3/19/2002
WMP 2/18/02
000030

Beechgrove
SERIAL DILUTIONS

Run Date	Analyte	Lab ID	Sample ID	Initial Conc	Serial Dilution Conc	% D	IDL	IDL*50
01/28/2002	As	297370	CSB-1A-F	8.5	8.8	4.54	0.097	4.85
	Cd			2.00	1.93	3.24	0.028	1.4
	Pb			173.5	170.29	1.87	0.029	1.45
01/29/2002	Sb	297370	CSB-1A-F	1.7	2.0	14.78	0.061	3.05
* Denotes that parameter was qualified because %D was >10% and both the Initial and								
Serial Dilution Concentrations were > IDL*50								

MP 2/18/02

Site Name: RMC Beech Grove
Project Number: 98-478-04

Laboratory: Trimatrix

Field Duplicates

Sample ID	Analyte	Units	Result	RPD	Qualifier
CSB-10A-H CSB-10A-HD	Total Arsenic	mg/kg	11	24.00	
		mg/kg	14		
	Total Antimony	mg/kg	1.8	11.76	
		mg/kg	1.6		
	Total Cadmium	mg/kg	5.1	8.16	
		mg/kg	4.7		
	Total Lead	mg/kg	101	82.52	*
		mg/kg	42		

Duplicate Criteria: Aqueous matrices <30 % RPD; Soil/Solid matrices <40 %RPD.

* - Denotes %RPD outside criteria.

NA - Duplicate relative percent difference cannot be calculated.

ND - Not detected.

WMP 2/12/02



APPENDIX E

Background Calculations and Soil Summary Analysis



Background Calculations and Soil Summary Analysis

The naturally occurring levels of arsenic from the area where the Site is located were evaluated to determine how background compare to the USEPA Region IX industrial soil PRG for arsenic (cancer) of 2.7 mg/kg. Background sampling was conducted to determine a representative range of naturally occurring levels of arsenic. The samples were collected from a portion of the Citizen's Gas property located west of the Site, which is an area that was thought to be unaffected by Site activities. The soil samples were collected from four locations (R2BG-1 through R2BG-4) at two depth intervals; A and B at depths of 0-3 inches and 3-10 inches, respectively. The soil sampling locations are shown in Drawing 4-3.

The background concentrations of arsenic were calculated using the guidance from the RISC Technical Guide, Section 1.6 (IDEM, 2001). Background is the mean plus one standard deviation. The background calculations are provided in detail below. The coefficient of variation (CV) is also calculated ($CV = \text{standard deviation}/\text{mean}$) to determine if additional sampling or other measures were required. If the CV exceeded 1.2 then additional sampling or other measures would be required. As shown below the CV for surface and subsurface were both below 1.2 indicating that the data sets were adequate for determining background.

SURFACE BACKGROUND

R2BG-1A	Arsenic	9.8 mg/kg
R2BG-2A	Arsenic	10 mg/kg
R2BG-3A	Arsenic	6.0 mg/kg
R2BG-4A	Arsenic	3.1 mg/kg

Mean = 7.23 mg/kg

Standard Deviation = 3.31 mg/kg

Coefficient of Variation = 0.46

Surface Background = $7.23 + 3.31 = 10.53$ mg/kg

SUBSURFACE BACKGROUND

R2BG-1B	Arsenic	8.0 mg/kg
R2BG-2B	Arsenic	7.2 mg/kg
R2BG-3B	Arsenic	7.5 mg/kg
R2BG-4B	Arsenic	6.6 mg/kg



Mean = 7.33 mg/kg

Standard Deviation = 0.59 mg/kg

Coefficient of Variation = 0.08

Surface Background = $7.33 + 0.59 = 7.91$ mg/kg

GROUNDWATER BACKGROUND

MW-9	9/22/2001	Total Arsenic	7.7 µg/L
MW-9	12/10/2001	Total Arsenic	4.0 µg/L

Mean = 5.85 µg/L

Standard Deviation = 2.62 µg/L

Coefficient of Variation = 0.45

Groundwater Background = $5.85 + 2.62 = 8.47$ µg/L

The groundwater background concentration for arsenic was calculated using the same technique outlined in the RISC Technical Guide (IDEM, 2001) as the soil background concentrations. With surface and subsurface arsenic background concentrations of 10.53 mg/kg and 7.91 mg/kg, any Site soil with equal or lesser concentrations can be attributed to naturally occurring background levels of arsenic. Any groundwater arsenic concentrations of 8.47 µg/L can also be attributed to naturally occurring background levels of arsenic.

Reference: Indiana Department of Environmental Management (IDEM), February 15, 2001, Risk Integrated System of Closure Technical Resource Guidance Document.

RMC Beech Grove Phase II RFI Soil Data Analysis										
Citizens Gas Property										
	0-3 inch lead			3-10 inch lead			0-3 inch arsenic		3-10 inch arsenic	
location	<400	<1000	>1000	<400	<1000	>1000	<10.5	>10.5	<7.9	>7.9
R2SB-1			1750			1080		141		50
2		918				4120		19		10
3			1620			1410		38		19
4			2490		874			28		13
5	121			68			10		5.5	
6		587		286				12		11
7	78			35			9.6			13
8	197			51				13		8.4
9			3330	287				47		12
10	25			10			8.9			12
11	360			83				14	7.5	
12				71				11		8.6
13			7390	24				53		27
14	89			7.3			8.6		3.6	
15	265			184			4.8			14
16	179			125			7.7			9
17			4160	267				25		11
18		669		122			10		6.3	
19		796		250				16		14
20		486		129			9.6		4.4	
21	296			84			10		7	
22		734		188				13		12
23		463		105			10			13
24		779		117				13		9.1
52	300			5.7			4.6		3.3	
53		499		58			8.4		3.3	
number of samples	11	9	6	22	1	3	12	14	8	18
arithmetic mean	173.64	659.00	3456.67	116.23	874.00	2203.33	8.52	31.64	5.11	14.78
overall mean		393.05			150.17		22.54		11.81	
% samples		0.77	0.23		0.88	0.12	0.46	0.54	0.31	0.69

RMC Beech Grove Phase II RFI Soil Data Analysis										
North of CG Property										
	0-3 inch lead			3-10 inch lead			0-3 inch arsenic		3-10 inch arsenic	
location	<400	<1000	>1000	<400	<1000	>1000	<10.5	>10.5	<7.9	>7.9
R2SB-32	286			91			4.9		4.2	
33	202			67			6.3		5.7	
34	170			28			7.1		4.1	
35	191			79			3.7		4.7	
36	310			109			7.8		6.1	
37	366				509		9.2		8	
38	282			175			6.5		5.2	
39	383			144			8.7		7.9	
40		422		50			6.9		4	
41	172			128			5.96		5.9	
42	165			77			4.2		3.9	
43	250			201			7.4		7.4	
44	252			108			7.8		8.5	
45	140			85			7.3		6.2	
46	34			41			6.9		6.5	
47	45			25			6.7		9	
48	41			45			6.5		6.5	
49	47			117			8			9.7
50	34			36			6.9		7	
number of samples	18	1		18	1		19		18	1
arithmetic mean	187.22	422		89.22	509		6.78		6.16	
overall mean		199.58			111.32					
% samples		1.00			1.00		1.00		0.95	0.05

Note:

Citizens Gas samples include 5 locations (R2SB-1 through R2SB-4 and R2SB-13) that were sampled twice.

Only one sample from each interval was used in these calculations. Typically, results flagged as estimated (J values) were discarded.



APPENDIX F

Permeability and Grain Size Analysis Report

Fort Washington, Pa 19034

Job Name: AGC: RMC-Beech Grove (#98-478-04)

Reviewed By ENM

Page No. 1

[illegible]

GeoSystems Consultants Inc.

Fort Washington, Pa.

Job Name: AGC: RMC-Beech Grove (#98-478-04)

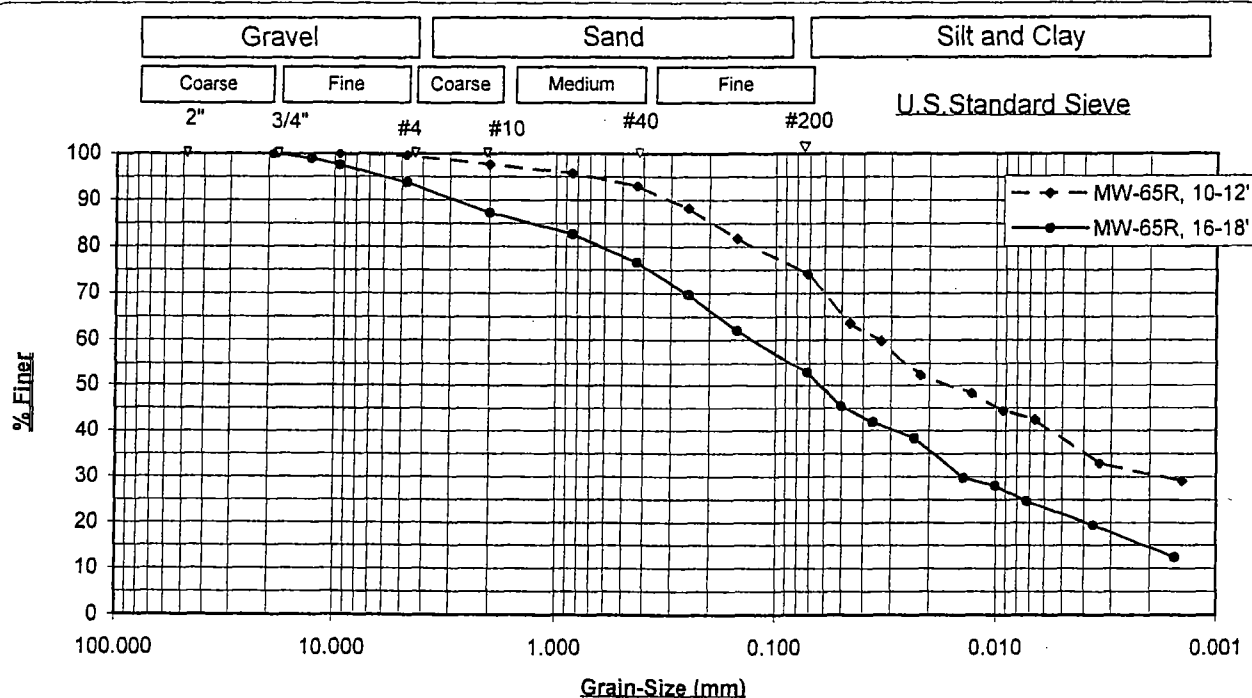
File No 2001731mah1

Job No. 2001g731

Date 12-Sep-01

					Cu	Undefined	Undefined	Undefined
					C c	Undefined	Undefined	Undefined
Dry Wt.	309.20	424.40	458.10					
Sieve	Weight	Weight	Weight	Sieve	Sieve	%	%	%
No.	Retained	Retained	Retained	No.	Size, mm	Finer	Finer	Finer
Sample No	MW-65R, 10-12'	MW-65R, 16-18'				MW-65R, 10-12'	MW-65R, 16-18'	
3"	0.00	0.00		3"	76.00			
2"	0.00	0.00		2"	50.80			
1.5"	0.00	0.00		1.5"	38.10			
1"	0.00	0.00		1"	25.40			
3/4"	0.00	0.00		3/4"	19.00		100.00	
1/2"	0.00	4.70		1/2"	12.70		98.89	
3/8"	0.00	10.20		3/8"	9.50	100.00	97.60	
#4	1.40	26.70		#4	4.75	99.55	93.71	
#10	7.00	54.00		#10	2.00	97.74	87.28	
#20	1.60	4.20		#20	0.850	95.78	82.69	
#40	3.90	9.80		#40	0.430	92.97	76.58	
#60	7.80	16.10		#60	0.250	88.21	69.71	
#100	13.10	23.20		#100	0.150	81.73	61.97	
#200	19.30	31.60		#200	0.072	74.16	52.80	

ASTMD-422



Boring/Sample No.	Depth	Water	LL/PL	Description
	Ft.	Content, %	%	
MW-65R	10-12			Brownish gray silt with sand (ML)
MW-65R	16-18			Light gray sandy silt (ML)

GeoSystems Consultants Inc.

Fort Washington, Pa.

Job Name: AGC: RMC-Beech Grove (#98-478-04)

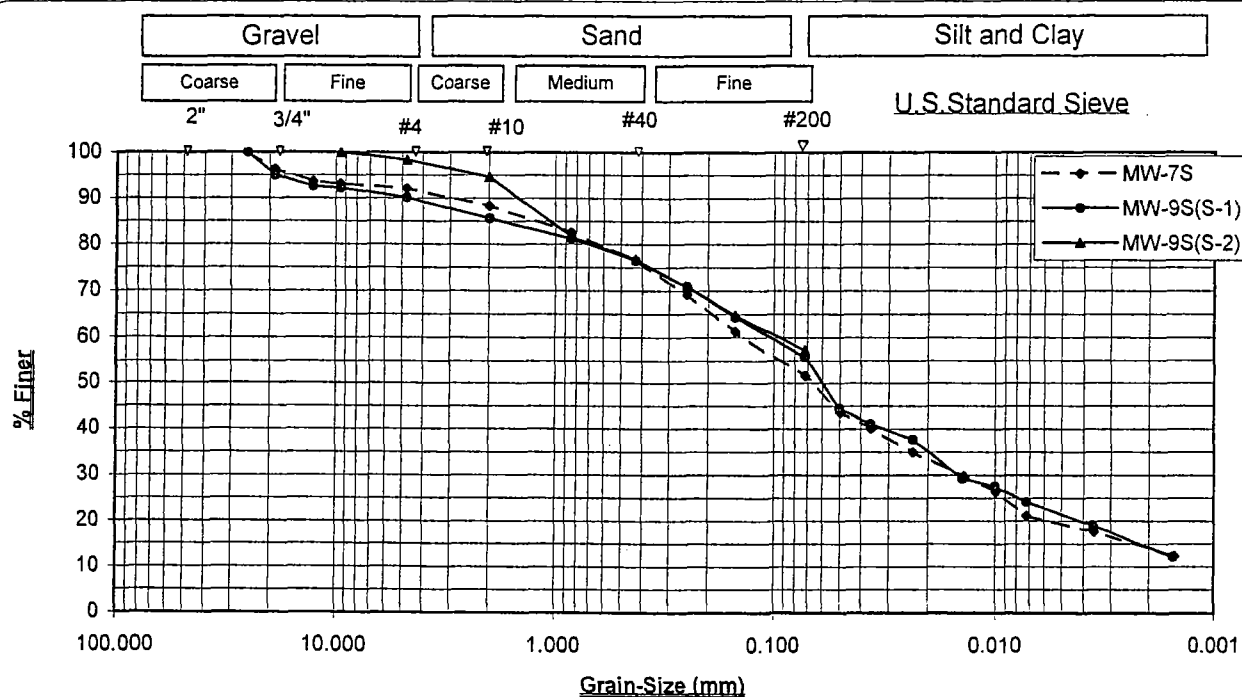
File No 2001731mah3

Job No. 2001g731

Date 12-Sep-01

					Cu	Undefined	Undefined	Undefined
Dry Wt.	513.00	458.10	463.50		C c	Undefined	Undefined	Undefined
Sieve	Weight	Weight	Weight	Sieve	Sieve	%	%	%
No.	Retained	Retained	Retained	No.	Size, mm	Finer	Finer	Finer
Sample No	MW-7S	MW-9S(S-1)	MW-9S(S-2)			MW-7S	MW-9S(S-1)	MW-9S(S-2)
3"	0.00	0.00	0.00	3"	76.00			
2"	0.00	0.00	0.00	2"	50.80			
1.5"	0.00	0.00	0.00	1.5"	38.10			
1"	0.00	0.00	0.00	1"	25.40	100.00	100.00	
3/4"	18.86	22.80	0.00	3/4"	19.00	96.32	95.02	
1/2"	32.80	34.00	0.00	1/2"	12.70	93.61	92.58	
3/8"	35.20	35.70	0.00	3/8"	9.50	93.14	92.21	100.00
#4	40.30	45.30	7.50	#4	4.75	92.14	90.11	98.38
#10	59.70	65.90	24.90	#10	2.00	88.36	85.61	94.63
#20	5.20	4.10	3.70	#20	0.850	82.62	81.23	81.65
#40	10.60	8.50	8.20	#40	0.430	76.65	76.52	76.84
#60	17.30	13.70	13.70	#60	0.250	69.25	70.95	70.95
#100	24.50	19.90	19.50	#100	0.150	61.30	64.32	64.75
#200	33.30	27.80	26.40	#200	0.072	51.58	55.86	57.36

ASTMD-422



Boring/Sample No.	Depth	Water	LL/PL	Description
	Ft.	Content, %	%	
MW-7S	26-28			Light gray sandy silt (ML)
MW-9S(S-1)	22-24			Light gray sandy silt (ML)
MW-9S(S-2)	24-26			Light gray sandy silt (ML)

GeoSystems Consultants Inc.

Fort Washington , Pa.

Job No: 2001G
 Job Name: AGC; RMC-BEECH GROVE N(#98-478-04)
 Date 9/10/2001
 Reviewed By: E.N.Manuel
 File No.: 2001731LK1

Summary Of Undisturbed Triaxial Variable -Head Permeability Tests **ASTMD-5084**

Date Tested	Test No.	Sample Label	W.Co %	Liquid/ Plastic Limit	Specific Gravity	Dry Density,pcf	So %	Öc tsf	W.C.f %	Sf %	k cm/sec.
09/08/01	1	MW-65R (10.0'-12.0')	17.0	N.T	2.74	114.7	94.7	0.72	17.9	99.7	4.90E-09
09/08/01	2	MW-65R (16.0-18.0)	10.2	N.T	2.74	133.5	99.3	0.72	10.3	100.0	4.03E-08
	3										
	4	Note: For MW_65R (16.0-18.0), found a 2" to 3" stone in the K sample after test.									
	5										
	6										
	7										
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	30										
	31										
	32										
	33										

Where:

W.C= Initial or Final Water Content

Yt= Initial Total Density

S = Initial or Final Degree of Saturation

Öc Effective Consolidation Pressure

K= Coeff.Of Permeability at 20 c

Yd= Initial Dry Density

Note: 1.Initial Hydraulic Gradient Used = 2

N.T- Not Tested